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EPIDEMIC DIARRHEA, NAUSEA AND VOMITING OF UNKNOWN CAUSE

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From the few reports of similar large and small outbreaks of a mild acute gastrointestinal disturbance observed in the United States,[1] Germany,[2] Canada,[3] England,[4] Denmark,[5] Australia [6] and elsewhere, one would gain the impression that it is an uncommon "new" disease entity. It is almost certain, however, that it is a widespread, communicable, endemic, sporadic and at times epidemic disease or group of diseases, apart from the known forms of dysentery and acute food poisoning, which because of its mildness usually passes unnoted in the press of other problems. In our experience, cases or groups of cases similar to those described have been casually observed for years. Most of the reported epidemics among adults occurred in schools, barracks, hospitals and hotels where the number, not the severity, of cases attracted attention and provoked inquiry. The majority of patients are not sick severely enough or long enough to seek medical advice, so that even large outbreaks are usually unrecognized unless deliberate attempts are made to detect them. For the most part the disease is included among the minor ailments as "indigestion," intestinal influenza, "stomach flu" or "gyppy tummy." The disease is not reportable and is given scant attention by public departments of health unless it is confused with dysentery or food poisoning. As may be expected, a variety of names have been used to designate it: hyperemesis hiemis or winter vomiting disease,[7] seasonal gastroenteritis,[8] intestinal grip (so called),[3] polytropous enteritis,[9] acute infectious gastroenteritis,[10] Spencer's disease [9] and Hannover disease.[2] It is important to know that such a syndrome exists which in epidemic form may be mistaken for bacillary dysentery or food poisoning and lead to misdirected, expensive search for its origin while in isolated instances patients with sudden nausea, vomiting, fever, leukocytosis and with abdominal pain, especially in the right lower quadrant, may be suspected of having acute appendicitis and be operated on. Boardman and others [10] reported cases of appendicitis which occurred during the disease. It is probable that the disease is often regarded as mesenteric adenitis, especially if at operation a normal appendix is found. Sunstroke [11] and scarlet fever [12] were suspected before final diagnosis was made in two outbreaks.

It is unknown at present whether or not the syndrome is related to the severe epidemic diarrheal disease of the newborn.[13] In most reports of the latter disease, emphasis is placed on the absence of obvious infection in adults associated with the infants either before, during or after an outbreak, and on the high mortality rate. The disease here described affects persons of all ages, and the mortality rate is nil.

The published epidemiologic and clinical descriptions of the syndrome are remarkably similar. Sporadic cases are noted in a community for weeks or months, and eventually large outbreaks occur. No age group is immune, but children of school age and young adults seem mostly to be affected. Epidemics occur at all seasons of the year but especially in the autum, and in different groups from 15 to 100 per cent of persons are involved. The incubation period is estimated as between thirty hours and seven days, usually two days.

In the majority of published reports the symptoms in approximate order of frequency are anorexia, nausea, vomiting, diarrhea, dizziness, aching and abdominal discomfort or cramps. Less often there are chilliness and fever, and in a few instances symptoms or signs of infection of the upper respiratory tract, bradycardia

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4. Smith, R. E.: Epidemic Diarrhea and Vomiting and Sporadic Diarrhea, Guy's Hosp. Rep. **88:** 150-162, 1938. Smith, A. H., D., and Davies, D. J.: An Outbreak of Acute Gastroenteritis Among Troops in a Large Training Area, Brit. M. J. **1:** 554-555, 1941. Miller and Raven.[14] Gray.[10] Bradley.[12]

5. Henningsen, E. J.: Peculiar Epidemic in Roskilde in December 1935, Ugesk. f. læger **98:** 45-48, 1936. Rischel.[11]

6. Harper, M.: Gastroenteritis or Epidemic Diarrhea: Review of Epidemic, M. J. Australia **1:** 538-543, 1932.

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8. McLean, C. C.: Seasonal Incidence of Gastrointestinal Symptoms Complicating Respiratory Infections in Childhood: Seasonal Gastroenteritis, South. M. J. **24:** 624-631, 1931.

9. Wildman, H. A.: Polytropous Enteritis (Acute Infectious Gastroenteritis, Spencer's Disease): Is It a Form of Influenza? Arch. Int. Med. **52:** 959-977 (Dec.) 1933.

10. Boardman, W. W.: Acute Infectious Gastroenteritis, Am. J. M. Sc. **196:** 833-840, 1938. Quigley, T. B., and Contratto, A. W.: The Differential Diagnosis of Acute Appendicitis and Acute Gastroenteritis in College Men, New England J. Med. **226:** 787-790 (May 14) 1942. Graham, W. H.: Diagnosis of Appendicitis with Gastroenteritis, Mil. Surgeon **55:** 296-300 (Oct.) 1944.

11. Rischel, A.: Epidemic Nausea, Ugesk. f. læger **97:** 1285-1288, 1935.

12. Bradley, W. H.: Epidemic Nausea and Vomiting, Brit. M. J. **1:** 309-312 (March 13) 1943.

13. Rice, J. L.; Best, W. H.; Frant, S., and Abramson, H.: Epidemic Diarrhea of the Newborn: I. Preliminary Considerations in Outbreaks of Highly Fatal Diarrhea of Undetermined Etiology Among Newborn Babies in Hospital Nurseries, J. A. M. A. **109:** 475-481 (Aug. 14) 1937.

and constipation. Several authors call attention to the frequency of giddiness suggestive of seasickness. Most of them are impressed by the abrupt onset: a person in good health may be working or waked from sleep and vomit suddenly. Fever occurs in a small number, seldom exceeding 38.5 C. (101 F.), but it may reach 40 C. (104 F.). Several authors record occasional sore throat and other evidence of respiratory tract disease, which Wildman [9] thinks may be coincidental. As may be expected, all gradations of severity and combinations of symptoms occur. Some patients have only transient nausea, some may vomit without nausea and others have only diarrhea. In two English groups diarrhea did not occur at all [14] or was of minor importance.[12] Most commonly the first complaint is a sense of epigastric discomfort and nausea, and after a few hours the symptoms may or may not be relieved by vomiting; diarrhea with from two to twenty movements a day may follow, or there may be no diarrhea. In our experience, diarrhea was a predominant symptom. After twenty-four to forty-eight hours with continued abdominal cramps or discomfort, aching muscles, irritability and weakness, recovery ensues. In a few cases diminishing symptoms persist for a week or more, and in others relapse occurs. Only a few are sick enough to stay in bed.

Laboratory data are not characteristic. The leukocytes are usually undisturbed in number but may reach 20,000. The vomitus and stools are not remarkable. Stools are watery and may contain mucus but no pus or blood. In a few instances in which bacteriologic studies were made [9] the usual flora of the intestinal tract was present. Boardman [10] isolated an unclassifiable bacillus of the typhoid-dysentery group which was not agglutinated by the patients' serum and which he thought was unimportant. Spencer [15] was impressed by the presence of an agglutinin for Bacterium shigae in 2 cases and suggested an attenuated dysentery bacillus to be the cause. Dysentery bacilli, however, are known to be present in a small proportion of healthy persons.

The cause of the disease is unknown, but all who have studied it believe it to be infectious and communicable. Food, milk and water are often suspected [15a] but have usually been eliminated as sources. Several authors [16] suggest that the infection is caused by some unknown air borne filtrable virus and is primarily a disease of the central nervous system because of the frequency of giddiness, nausea, precipitate vomiting without other evidence of gastroenteritis and the frequent absence of fever. Boardman [10] favors the view that it may be an acute infectious gastroenteritis caused by a filtrable virus.

REPORT OF TWO EPIDEMICS

Our attention was called to an epidemic after observing a characteristic familial outbreak as follows:

On Nov. 20, 1943 a child aged 8, previously well, was wakened at night and vomited suddenly before he could get out of bed. He had transient chilliness and abdominal pains but returned to sleep. Profuse diarrhea in three or four passages occurred in the morning, and abdominal discomfort and cramps persisted during the day. On the following day there was only anorexia.

On November 21 the servant, aged 62, felt well until after the evening meal, when she noted epigastric discomfort. She went to bed but was wakened by precipitate vomiting. Abdominal cramps and profuse diarrhea followed in the morning, but aside from weakness, nausea and occasional loose bowel movements she kept at work and felt well again on the 23d. Nausea, diarrhea and weakness recurred two days later and lasted two days.

On November 22 a child aged 11 had anorexia in the evening. He had a normal bowel movement and, ten minutes later, a profuse diarrheal movement. The next day he went to school but noted malaise, vomited once and felt chilly. Diarrhea and chilliness recurred. He was the only member of the family group who complained of the giddiness emphasized by English observers. Malaise, irritability, nausea and occasional diarrhea persisted for five days, although he was ambulatory. Other than pallor and a coated tongue there were no abnormalities.

On November 24, in the late afternoon, the father was annoyed by persistent yawning. After an evening meal of meat loaf made of "left overs," epigastric discomfort as a sense of fulness, and later gastric splashing and nausea were noted. The meat was suspected, and an unsuccessful attempt was made to vomit for relief. He retired and slept well but was waked by epigastric discomfort, vomited clear fluid once and felt better. The next day there was slight malaise, aching of the legs, abdominal discomfort and "uncertainty," but diarrhea did not occur. The tongue was coated; anorexia and slight abdominal discomfort lasted five days more. One loose bowel movement occurred on the 25th.

On November 25 the mother woke in the morning with nausea, slight chilliness and aching of the muscles. Mild epigastric discomfort and anorexia lasted a day, but vomiting and diarrhea were absent.

None of the family group had had recent infection of the respiratory tract, and none had fever. The servant, who entered employment on November 18, may have been suspected as a carrier who introduced an enteric infection, or the meat loaf, a commonly incriminated agent for bacterial food poisoning, may also have been suspected. In the first instance, however, the maid became sick after the 2 children did, and the meat loaf was first served after 3 had been sick.

On inquiry it was then learned that the disease was widespread at the time and had been for some time before. Practicing physicians who were questioned stated that many cases, including family and student groups like the ones reported here, had occurred in the city of Philadelphia and in its suburbs, and word was received of similar outbreaks taking place at the same time in Virginia, Quebec, Iowa and Michigan. No cases had been reported to the local city department of health, but several investigations by others had been made of outbreaks suspected as being food poisoning.

THE STUDENT GROUP

Because of the family outbreak mentioned, and because of a few previous similar sporadic cases which had come to our attention, the student body was questioned and investigated beginning on November 25. Except for the few sick students who sought medical service or entered the hospital, the great majority of cases would otherwise have been missed and the epidemic would have passed unnoted. Numbers of students stated that multiple cases had occurred in their families and friends. A large but undetermined number of cases also occurred among the nursing and hospital staff.

The first 4 cases had apparently occurred in September, 6 more in October and 3 in December, but the

14. Miller, R., and Raven, M.: Epidemic Nausea and Vomiting, Brit. M. J. **1**: 1242-1244, 1936.
15. Spencer, R. R.: An Unusually Mild Recurring Epidemic Simulating Food Infections, Pub. Health Rep. **48**: 2867-2877, 1930.
15a. Korns, R. F.: An Unusual Water Borne Outbreak of Gastroenteritis, abstr., J. Bact. **47**: 582 (June) 1944.
16. Gray, J. D.: Epidemic Nausea and Vomiting, Brit. M. J. **1**: 209-211 (Feb. 4) 1939. Bradley,[12] Rischel,[11] Henningsen.[5]

majority in November with from 1 to 3 cases daily until the greatest number, 25, occurred between the 20th and the 28th, as shown in the chart. Of approximately 270 students included in the study, about 54 (20 per cent) were sick, and only 7 were sick enough to stay in bed.

Students dined in different dormitories or elsewhere, so that food poisoning was not likely. The water supply was common to all but different from that of the suburbs, where numerous other cases occurred.

Clinical.—The clinical features of the epidemic, with few exceptions, so closely resembled those previously reported elsewhere that detailed description is not needed. The incubation period was apparently a matter of a few days. The most common initial symptoms in order of frequency in 62 cases including students and others were abdominal discomfort, nausea and diarrhea. Headache, a desire to defecate, vomiting, malaise, fatigability, shaking chill, anorexia and fever were mentioned less often.

During the course of the disease all 62 had anorexia, 53 diarrhea, 47 nausea and malaise, 41 headache, 33 vomiting, 27 abdominal discomfort or pain, 22 fever and 20 general aching. Respiratory tract symptoms were present in 12, shaking chills in 6 and giddiness and vertigo in only 4. Relapse occurred in 6, usually after a few days but in 3 cases after a month. Acute appendicitis was suspected in 3 cases. The average duration was 3.2 days, with extremes of a few hours and fourteen days. No complications were registered.

A few of the severest cases studied in the hospital may be summarized as follows:

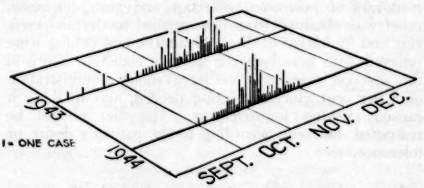
CASE 1.—P. A., a man aged 25, noted transient stomach ache on November 6. On November 7, nausea and 10 watery bowel movements occurred, and there was headache and nausea on moving about. At 8:45 p. m. there was a series of shaking chills over a period of an hour, followed by stiffness of the muscles. He was admitted to the hospital, with fever of 103 F. and a pulse rate of 110. Acute enteritis or meningitis was suspected. His face was flushed, the conjunctivas were injected and the headache was intense. The pharynx was not inflamed, and the abdomen was tender. The leukocytes numbered 13,000. Next morning he was much better; the temperature was 102 F., later 101 F., without diarrhea and nausea, and was normal by the fourth day.

CASE 2.—G. U., a man aged 27, had sore muscles, especially of the calves, and malaise on October 16 and 17. At midnight of the second day he had a shaking chill lasting five minutes, followed by intense headache. He went to sleep but was waked several times by sweating. At 3 a. m. he was nauseated and vomited twice before morning. There was no diarrhea. His pharynx was moderately injected and the nasal mucosa inflamed, probably from vomiting; and cultures therefrom revealed only the usual flora. The leukocytes numbered 16,000. The cold agglutination and heterophile antibody tests gave negative results. The temperature was 102.4 F. but diminished to normal by the fifth day.

CASE 3.—S. C., a man aged 24, was waked at 3 a. m. November 5 by a painful desire to defecate, but an attempt to do so was unsuccessful. The sense of urgency was replaced by abdominal aching, for which the knee-chest position was found to be most comfortable. Shortly thereafter defecation was imperative with numerous watery stools for the rest of the night. Copious vomiting followed the second and third movements. By morning the abdominal pain had diminished, but there were headache, painful eyes, backache, sore throat, nausea and malaise. He felt cold all day. The fever reached 100.5 F. and the pulse rate 110. The next day it was 101 F., but he felt much better and was discharged on the third day. The leukocyte count was 11,000, and only the usual flora was present in the stool. The cold agglutinin test gave a negative result.

CASE 4.—J. K., aged 64, admitted to the general medical ward on Oct. 26, 1943, had been well until one hour after lunch, when he felt sick and weak and vomited before he could reach a receptacle. Soon after there was a copious watery bowel movement. He tried to return to work but had continuous repeated watery movements and vomiting, after which he was prostrated and sweated profusely. He arrived at the hospital at 4:30 p. m., where he had a shaking chill, more diarrhea and abdominal soreness. He vomited again in the evening. Food poisoning was suspected, but other persons who partook of the same food were unaffected.

On admission to the hospital he was in a mild shocklike state, with temperature 96.6 F., pulse rate 100 and blood pressure 96 systolic and 58 diastolic. He was drowsy and complained of weakness and thirst. There were no abnormal findings except a tender abdomen, audible peristalsis, dehydration and injected conjunctivas. He was given 2,000 cc. of 5 per cent glucose solution by vein and soon felt much better. The fever rose to 100 F., where it remained for two days and diminished to normal by the fifth day. The leukocytes numbered 17,000, 13,000 and 9,000 per cubic millimeter. Blood culture was sterile, the blood sedimentation rate normal, and culture of the stool revealed Escherichia coli and Klebsiella pneumoniae.



Distribution of attacks in the epidemics of 1943 and 1944.

THE 1944 EPIDEMIC

An outbreak similar to the one in 1943 was anticipated in the autumn of 1944. Repeated questioning of the medical student and nursing school groups discovered the first few attacks scattered in October, as shown in the chart. Later in the month and in early November 2, 3 and at most 7 cases daily appeared. After November 7 the number declined until a total of 84 persons among a student nurse group of about 800 (10 per cent) were affected. Since only 6 or 7 of these were sick enough to come to the school physician, the epidemic, no doubt, would again have passed unnoticed except for the deliberate attempts made to reveal it. The symptoms were the same as those in the 1943 epidemic, but the incidence of mild upper respiratory tract infection was higher, 38 per cent as compared with 19 per cent. Of 32 with respiratory tract symptoms, 7 had had "colds" a week or two before but had recovered from them; in 4 the cold merged with the gastrointestinal derangement, but in 21 slight sore throat and/or nasal obstruction and rhinorrhea occurred at the onset or with the disease in question. Only 3 or 4 reported colds without gastrointestinal distress during the early part of the outbreak, but for a few days in late November "colds," as such, outnumbered gastrointestinal disturbances. It is impossible to state whether a single infectious agent was operative to cause different symp-

toms in different victims or, more likely, whether two different mild diseases overlapped.

Numerous similar attacks of diarrhea, nausea and vomiting occurred at the same time among persons of all age groups in the private practices of various physicians questioned and outbreaks were said to have occurred in Duluth, St. Louis and elsewhere. A few occurred in the older group of hospital personnel and in hospital patients, including mild cases in 3 newborn infants. In the surgical service a child aged 5, who had had a cold and developed abdominal cramps, nausea, fever of 101 F. and leukocytosis of 13,000, was operated on, November 18. Since the appendix was normal and the lymph nodes were swollen, a diagnosis of mesenteric adenitis was made.

TREATMENT

In the great majority of cases the disease is mild and brief and needs no treatment. For abdominal discomfort, rest in bed and the local application of heat give relief. Voluntary abstinence from food usually suffices to control nausea, but Wildman [9] suggests the use of various drugs, including castor oil, tincture of belladonna or atropine, sodium nitrite and others. We believe our patients fared as well without these remedies, as they did without the administration of purgatives; perhaps better. Vomiting, spontaneous or induced, often lessened epigastric discomfort or nausea. Camphorated tincture of opium seemed helpful in a few instances of protracted diarrhea and pain, but most relief was obtained from heat applied to the abdomen, rest and limitation of diet. Headache and aching were relieved with acetylsalicylic acid or codeine. Only in the severest cases was the intravenous administration of 5 per cent glucose solution needed, and in these it caused striking improvement. The diet should be restricted, but only according to the patient's desire or tolerance.

ETIOLOGY

Bacteriologic study of the stools and pharyngeal secretions from 10 patients revealed no unusual bacteria or other parasites to account for the disease. Diarrheal stool samples from 5 patients were mixed with isotonic solution of sodium chloride and spun at slow speed in the centrifuge. The supernatant fluid was inoculated orally, intranasally and rectally into young black and white mice. Samples passed through Berkefeld N and medium Mandler filters were inoculated intracerebrally. Pharyngeal washings in bouillon were inoculated intranasally and, after filtration, intracerebrally. About 100 mice were used in these tests, but only a few became sick or died. Of these a few showed pneumonitis at necropsy, but no other significant lesions were observed even after microscopic study of sections of the viscera. Suspensions of lungs and spleen were reinoculated into 100 fresh mice, in some instances to the fourth passage, but again without any consequence of note. In a few instances the chorioallantoic membranes of developing chick embryos were inoculated with filtrates, but without result.[16a]

Serum samples taken during the acute and convalescent phases of the disease from 5 patients contained no abnormal cold agglutinin or heterophile antibody. Unfortunately, serums from patients at the height of the epidemic in November were not tested for antibodies against influenza virus. However, serum from several patients who were sick with a similar disease a month later were tested by Dr. Thomas Francis. But at this time an epidemic of known influenza also occurred, so that the increase of titer of antibody against influenza A found in 3 cases is confusing.

Samples of diarrheal stools from 4 patients sick in the November outbreak were kept frozen with solidified carbon dioxide. Two months later the samples were thawed and, together with 4 fresh samples from patients sick with apparently similar disease in February, were filtrated through Mandler filters and injected intranasally in 8 calves, 4 to 6 weeks old, according to the technic of Light and Hodes.[17] None of the calves showed any evidence of infection.

Experimental studies with material obtained in the 1944 epidemic are in progress. The results thus far strongly suggest that the disease can be transmitted to volunteers by the inhalation of a fine mist of filtered nasopharyngeal washings or stools from patients, delivered by means of Wells flasks and compressed air.

COMMENT

In the absence of a discoverable cause, numerous observers, including ourselves, suspect an unknown enterotropic filtrable virus or group of viruses. However, until the discovery of a virus in cats by Silva [18] and one in calves by Baker [19] no filtrable agents had been known to attack the gastrointestinal tract primarily. More supportive evidence was recently discovered by Light and Hodes,[17] who report success in establishing regularly a transmissible diarrheal disease in calves after intranasal inoculation of filtered stools from newborn infants with epidemic diarrhea.[18] We were unable to confirm their results, but we may have dealt with a different disease or failed otherwise. Appraisal of our current experiments must await further study. A filtrable virus has been isolated from infants with stomatitis and diarrhea.[19a]

There is reason to believe that one or more as yet unknown filtrable viruses are enterotropic and account for the numerous virus-like infections of obscure cause so frequently observed. It is also possible that certain neurotropic viruses affect the central nervous system and cause secondary gastrointestinal disturbance, as suggested by European observers.[16] Gastrointestinal symptoms are outstanding in mild attacks of poliomyelitis, for example. The diversity of the symptoms themselves or in the order of their predominance in different reported epidemics, such as the absence of diarrhea in some, its predominance in others, the presence or absence of giddiness, bradycardia, respiratory tract symptoms, and so on, suggests that different entities were dealt with. These slight differences may be explained by the well known existence of closely related but slightly different strains of an infective agent in other infectious disease groups in which the tropism of the virus determines which organs or tissues bear the brunt of the infection. Differences even in disease caused by one agent may be accounted for by the age group involved, the season of the year, the concurrence of other infections, differences in observation, interest, questioning or recording, and other factors.

16a. Reimann, H. A.; Price, A. H., and Hodges, J. H.: Negative Results in Studies of Epidemic Diarrhea, Nausea and Vomiting of Unknown Cause, Proc. Soc. Exper. Biol. & Med. **55**: 233-234, 1944.

17. Light, J. S., and Hodes, H. L.: Studies on Epidemic Diarrhea of the Newborn: Isolation of a Filtrable Agent Causing Diarrhea in Calves, Am. J. Pub. Health **32**: 1451-1454, 1943.

18. Silva, M., Jr.: Epizootic of Domestic Cats in Caró: Gastroenteritis Due to Virus, Hospital, Rio de Janeiro **18**: 1015-1018, 1940.

19. Baker, J. A.: A Filtrable Virus Causing Enteritis and Pneumonia in Calves, J. Exper. Med. **78**: 435-445, 1943.

19a. Buddingh, G. J., and Dodd, Katherine: Stomatitis and Diarrhea of Infants Caused by a Hitherto Unrecognized Virus, J. Pediat. **25**: 105-113 (Aug.) 1944.

The concurrence of mild nasopharyngitis in a certain proportion of cases reported here, and also by others, raises these questions: (*a*) Does nasopharyngitis occur as part of the syndrome in certain instances as it does in poliomyelitis, for example, (*b*) are "colds" unrelated and coincidental, (*c*) do colds precipitate attacks of the disease and (*d*) is the disease primarily one of the upper respiratory tract with dominant gastrointestinal symptoms? The first and second possibilities seem most likely to be the correct ones.

Epidemiologically, the mild widespread disease with isolated cases and family and community groups involved, its apparent pandemicity and its seemingly short incubation period closely resembles the behavior of the common cold or influenza, except for its spread over two or three months and absence of "peaking." It is probably an air borne infection, but hand to mouth or other means of transmission cannot be excluded, nor is it known whether it enters through the respiratory tract or the digestive tract. The nature of the epidemic, its prevalence in widely scattered areas and its duration eliminate the question of food poisoning or of transmission of ordinary bacterial infection by water, milk or insects. If the disease regarded as epidemic diarrhea, nausea and vomiting is responsible for periodic outbreaks as it seems to be in the United States, it outnumbers all other diarrheal diseases at times and the view of Hardy and Watt [20] that Shigella dysenteriae infection is the most probable diagnosis for acute endemic diarrhea does not always hold.

In the face of the present uncertainty it seems best to regard the disease as a nonseasonal contagious and infectious one, affecting predominantly the gastrointestinal tract and not caused by any of the known infectious agents, but possibly of viral origin. The discovery of a group of enterotropic viruses would perhaps open a field of investigation of as much importance as that pertaining to the newly recognized virus-like infections of the lungs.

SUMMARY

A widespread mild epidemic disease characterized by anorexia, malaise, diarrhea, nausea and vomiting occurred in October and November of both 1943 and 1944 in Philadelphia and its environs and in other widely scattered places at the same times. In a group of medical students studied in 1943, 20 per cent were affected and in 1944 about 10 per cent. The outbreaks were similar to previously reported epidemics elsewhere and were probably of the same entity or a similar one. They were apparently not related to food or water and not caused by any known bacilli of the so-called enteric group. A filtrable virus has been suggested to be the cause, but whether the infection is primarily one of the respiratory tract, the central nervous system, as some observers believe, or of the gastrointestinal tract, which seems more likely, is still unknown. We were unable to transmit the disease to animals or to isolate a filtrable agent, but suggestive results were obtained in volunteers. The infection is believed to be an air borne one which gains entry through the respiratory tract or the gastrointestinal tract. It is probable that the syndrome is a common one but is often ignored, unrecognized or mistaken for influenza, food poisoning, bacillary dysentery, acute appendicitis or mesenteric adenitis.

20. Hardy, A. V., and Watt, James: The Acute Diarrheal Diseases, J. A. M. A. **124**: 1173-1179 (April 22) 1944.

ABSTRACT OF DISCUSSION

DR. H. J. SHAUGHNESSY, Chicago: The syndrome which Drs. Reimann, Hodges and Price have reported has been seen frequently in the Chicago area during the last five years at least. It has swept through my own family at least three times during that period. As noted by the authors, a particularly striking feature of some of the cases which have occurred in children has been the vomiting, often projectile in character, which sometimes began while the child was asleep. The child went to bed apparently feeling perfectly well and woke up vomiting several hours later. Outbreaks of this disease sometimes occurred simultaneously in several communities which were rather widely separated and which had different water and milk supplies. This suggests, therefore, that the disease is contact borne, and for that reason the studies made in our laboratories have been directed toward the examination of specimens from patients rather than the examination of specimens of water, milk or food. The results of such studies from the bacteriologic standpoint, which I am sorry to say we have not been able to do in the systematic manner which we should have liked, have been essentially negative. None of the ordinary bacteria capable of causing gastroenteritis have been found, nor have we found any virus agent that could be considered to be the cause. Possibly the reason for this is that in most of our earlier work we concentrated on attempts to find bacteriologic agents. One suggestive finding has been obtained, however, which may have some bearing on the etiology of this disease. An epidemic of diarrhea of the newborn, from which no significant bacteria were obtained, yielded a virus-like agent which caused profuse diarrhea and severe loss of weight, that is, loss of weight amounting to one third of the body weight in many cases and extreme dehydration in guinea pigs. That agent was carried through three passages in guinea pigs, producing in each passage a similar but less severe condition. It could not be maintained beyond these three passages, however, in the several species of animals which were tried. Unfortunately, we did not try that agent in calves, because at this time we were not aware of this work, which was then unpublished. This virus-like agent was, therefore, lost. These findings may or may not have some importance in connection with this disease, because at the same time that this outbreak of diarrhea of the newborn was occurring in this community we also had an epidemic of diarrhea, nausea and vomiting among adults and children. Possibly, therefore, the two were related in etiology. However, the only adult from whom this virus-like agent was isolated was a nurse who was in contact with the infants in the hospital where the outbreak took place. She may have been the source of infection of some of the infant cases, but on the other hand she may have become a carrier of this agent from her contact with the infant population. Unfortunately, a good opportunity for attempting to repeat this work has not presented itself since this study was made. There have been several subsequent outbreaks of this type in Illinois, but we have not learned of them until too late to be able to collect specimens early in the course of the disease. For the present all we can say is that this finding of a virus-like agent is suggestive, and perhaps other investigators might be on the alert for something of this kind.

DR. RUTH E. TAYLOR, Chicago: Up to the present, investigation of this disorder has been singularly fruitless. Our own observations have been practically a duplication of Dr. Reimann's. We have had several outbreaks in our dormitories during the past eighteen months, the last one occurring in April of this year. Epidemiologic considerations eliminated local floor sanitation. Cultures were taken of the drinking water from the taps and drinking fountains. Throat cultures were made, a case of scarlet fever having occurred concurrently, and stool cultures were taken from the kitchen staff and a few of the patients. Cultures were uniformly negative for significant pathogens. All of our dormitories obtain food from a common kitchen. Dishes are washed in a common automatic washer. The outbreak, however, involved only one dormitory. Our conclusion was that the epidemiology indicated an infectious etiology. The time of the onset, bacteriologic findings, lack of correlation of food sanitation or contaminated water supplies or the presence of nasopharyngeal pathogens left us without a definite etiologic agent.

Stool specimens from early cases were too few to permit of a definite conclusion, but the absence of demonstrable pathogens suggested a nonbacterial cause.

DR. J. A. GARCIA, Corpus Christi, Texas: The diarrhea under discussion I believe is the same type of diarrhea we have endemically in Texas, in South Texas especially. We have an unusual epidemic type of it every summer, but we have the endemic type at any season of the year. The public health service in Corpus Christi and the Texas state health authorities have done systematic work in examination of food handlers who have had diarrheas. These have had a stool examination. Up to the present time they have not found Shigella or Salmonella, although it may be that the old type culture medium is not the right type in which to isolate these organisms. It is my opinion that there are two types, the adult and the childhood type. Adults as a rule do not even consult a physician and they usually treat themselves with bismuth preparations sold by drug stores and with other "patent medicines." I should like to ask Dr. Reimann if the cases he observed were in adults or whether they were, say, in children under 1 year of age. When the diarrhea is contracted by children under 1 year of age it has an astounding mortality. Before the sulfonamides came into use the mortality was up to between 20 and 25 per cent; and to me it is the most dreadful disease that I come in contact with in children under 1 year of age. In some children it seems to be a sort of bacteremia. It hits them suddenly and some of them die within six to twelve hours. I have been using sulfaguanidine and sulfathiazole. Yesterday Dr. Harvey recommended sulfadiazine. But there isn't time to get them well. The mortality has been reduced down from the old 25 per cent, but it is still tremendously high. A lot of babies that are only breast fed have the disease. There is only one thing that they take—water. The water is constantly examined bacteriologically by the U. S. Public Health Service and found always to be all right. The fact that babies of 1 or 2 months get the disease, who are only breast fed and take only water (and as a rule they boil the water), seems to me to prove that it is not so much a food contamination but rather a Shigella or Salmonella or perhaps a virus infection, as expressed previously.

DR. D. J. SANDWEISS, Detroit: Dr. Reimann mentioned Michigan as one of the states reporting this type of epidemic. During the last ten months I have seen more than 150 patients with the syndrome of diarrhea, nausea and vomiting. In 120 of these patients I have had repeated stool cultures to determine whether bacillary dysentery was responsible for the gastrointestinal upset. I wish to stress that (1) it is important that stools be cultured in a laboratory that is adequately equipped and specially staffed for such work and (2) the stools should be cultured not later than four hours after excretion. The stool cultures on my series of patients were made at the laboratory of the department of health at Herman Kiefer Hospital, which has a special setup for these types of examinations. Dr. Joseph Kasper, who is in charge of the laboratory, and the bacteriologist in charge of stool culturing, have been with the division of laboratories for years and are especially trained in the identification and isolation of pathogens in the intestinal flora. Not infrequently I have had negative stool reports in one laboratory while the stool of the same patient taken from the same specimen on that day was found to harbor pathogens when examined by the laboratory at the department of health. The diagnosis of bacillary dysentery is primarily a laboratory procedure. In 40 of 120 patients we have been able to isolate 20 different strains of pathogens. Fifteen of these patients were found to have double or triple infections. Twenty-three of the 40 patients were found to harbor Shigella paradysenteriae Flexner, 11 Shigella paradysenteriae Schmitz, 2 the Sonne type of organism, and in 8 the Shigella alkalescens strain was isolated. Interestingly enough, in 11 patients the Salmonella type of pathogens was found, predominantly the paratyphoid B organism. Thirty of the 40 patients have so far been observed over a period of two to six months with repeated stool cultures. We found that months after the original episode of nausea, vomiting and diarrhea the stools of 13 patients (43 per cent) still harbored bacillary dysentery pathogens. This is very important! These patients are potential menaces for the spread of bacillary dysentery. They present a hazard as carriers, particularly in food establishments. I want to stress again that special laboratories, experienced in the isolation and identification of intestinal pathogens, must culture these stools in order to be certain that one is dealing with a nonpathogenic type of diarrhea.

DR. HOBART A. REIMANN, Philadelphia: In answer to Dr. Garcia, except for the children mentioned in the family outbreak we dealt entirely with adults. I believe that the severe epidemic diarrheal disease of the newborn should not be confused with the one discussed here. I suspect that they are different, but, as stated in the paper, final proof awaits the discovery of the causative agents. Dr. Sandweiss is correct in stating that before negative results, or results of any kind, can be accepted in a disease like this, it is important that the work be done by trained bacteriologists, with careful control observations. Even so the significance of the presence of certain strains of Shigella or Salmonella may be difficult to assess. Their mere presence does not always prove their etiologic relation to disease. Many healthy persons carry them in their intestinal tract as commensals, and if in such persons diarrhea occurs from some other cause the presence of these bacilli is confusing indeed. There is apt to be as much confusion in this respect as there was concerning the ubiquitous Streptococcus viridans when it was found in various places in the body.

TREATMENT OF GONOCOCCIC VULVOVAGINITIS

A STUDY OF 442 CHILDREN

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Gonococcic vulvovaginitis is a disease affecting the portio of the cervix, the vagina and the vulva of female infants and children. Its manifestations are a purulent discharge, edema, redness and tenderness of the parts affected, and occasionally lower abdominal pain. Complications of the disease are relatively rare.[1] The disease is spread only by contact with infected purulent vaginal discharge; hence its spread does not become epidemic. Furthermore, if the child is not treated she usually ceases to have a profuse discharge after six to eight weeks and frequently is cured spontaneously a few weeks after this time.[2] Therefore it is obvious that gonococcic vulvovaginitis is a very mild disease. Its treatment should aim at clearing up the purulent discharge as quickly as possible with an agent that is relatively innocuous to the patient. A recent careful study of this problem in New York City [2] among a group of children hospitalized and hence to some extent isolated showed the relative merits of smear and culture in detecting gonococci in diagnosis and in following the effect of treatment. The relative merits of sulfathiazole and estrogens in eliminating all gonococci were compared. Furthermore, the same study emphasized that most of the children in that city seen because of vaginitis have a discharge from which gonococci could not be isolated ("nonspecific") (77.8 per cent) rather than

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1. Benson, R. A., and Weinstock, I.: Gonorrheal Vaginitis in Children, Am. J. Dis. Child. **59**: 1083 (May) 1940. Compton and Bieren,[3] Thomas.[4]

2. Rice, J. L.; Cohn, A.; Steer, A., and Adler, E. L.: Recent Investigations on Gonococcic Vaginitis, J. A. M. A. **117**: 1766 (Nov. 22) 1941.

vaginitis caused by gonococci (22.2 per cent). In our clinic 442 cases have been examined for vaginal discharge and 318 (72 per cent) of these showed gonococci on direct smear of the vaginal secretions. We have found that in most instances the secretions are loaded with gonococci, so that the diagnosis is easily made by direct smear; this is in decided contrast to gonococcic disease in women, among whom even cultural methods have been shown to be diagnostic in only about one fourth (21 per cent) of the patients suspected of having the disease.[3] Our methods of study, diagnosis, treatment and follow-up of patients can be duplicated easily in any outpatient departmeont or office practice. These methods have been found to be successful in eliminating the purulent discharge and other symptoms. Gonococcic vaginitis has been treated successfully with natural and synthetic estrogens, sulfathiazole and sulfadiazine, and a combination of the estrogens with these sulfonamide drugs. However, because the sulfonamide drugs are known to produce a sensitivity in some patients, as is evident from much recent literature,[4] we feel that their use should be reserved for treating potentially lethal diseases and used in the treatment of gonococcic vulvovaginitis only when complications develop or estrogen treatment proves unsuccessful.

MATERIALS AND METHODS

The clinical history is important because this disease is spread only by contact with infected purulent vaginal discharge. Hence exact information relative to the duration of illness, number of children in the home, the individuals with whom the child sleeps and plays and the school the child attends have been tabulated.

Examination of the patient has included inspection of the eyes for infection, palpation of joints for swelling or tenderness, examination of the breasts for tenderness, secretion and size, abdominal examination for tenderness or spasm and palpation of the inguinal region for swollen nodes. The relative amount of vaginal discharge or bleeding has been noted. A specimen of the vaginal secretions has been obtained from high in the vagina for examination by direct smear by means of a small applicator. Vaginal washings in isotonic solution of sodium chloride have been obtained by using an eye dropper with a fine bore rubber tubing attachment. This routine can be followed at each visit without causing discomfort to the patient.

The vaginal secretions have been tested first for p_H with nitrazine paper. Then they have been smeared on a clean glass slide and stained with the Nicolle modification of the gram stain (the gentian-phenol mixture being made up fresh each day) and carefully examined for gonococci. The observer must be trained to differentiate gonococci from other gram negative organisms, which are often abundant. In our service the assistant resident has been supervised daily for one month, and thereafter for one year he has seen all children that come into the clinic with vaginal discharge and noted in the smear the presence or absence of gonococci, Döderlein's bacilli, other gram positive or gram negative organisms, pus cells and epithelial cells. If the vaginal discharge noted is abundant and the smear shows pus cells but no gonococci, a wet preparation has been examined for the presence of Trichomonas or other causative organisms and the vagina probed with an applicator for the presence of a foreign body if no etiologic factor is found. Occasionally it has been necessary to inspect the vagina with a Kelly cystoscope to rule out the latter possibility.

As soon as the diagnosis has been made, the mother is told the importance of relative isolation of the child in the home during the day and night and instructed in the use of commode, towels and clothing. It is of utmost importance that instructions be given to the mother or an adult at each visit, and no child should be treated unless she is accompanied by an adult. The mother or other intimate contacts should be examined to determine the source of infection and to diagnose and treat other infected persons in the home. The importance of keeping appointments on the exact date has been stressed. We examine the child at weekly intervals until there have been three successive negative smears; then she is seen at monthly intervals until the smears have been negative for three months. She is then seen at three month intervals and discharged when well for one year.

A file of return appointment dates has been kept, and as soon as the appointment has been missed the parent is notified to bring the child into the clinic. The data of the history and examination, the duration of treatment and the daily dosage of medication prescribed have been listed in a cross file. Treatment of the patient has usually continued for one week beyond the date when the smear first became negative for gonococci. Full vaginal cornification must also be present in children receiving estrogen therapy, but usually this occurs shortly before the smear becomes negative for gonococci. The child is allowed to return to school as soon as the symptoms entirely clear and the smear becomes negative. On the other hand, as long as the smear remains positive the school authorities have been instructed not to let the child return to school. This assistance by the school authorities, working through our social service department, often has been the determining factor in insuring adequate treatment of the child, for most of our patients are Negro children from overcrowded homes where supervision is poor.

RESULTS

There were 318 cases of gonococcic vulvovaginitis diagnosed and treated. No child was discharged as cured unless she had had persistently negative smears for one year. One hundred and fifty-three children were successfully followed for one year after the smear became negative. Most of the remaining 165 cases were treated until their symptoms cleared, but because they were not followed until officially discharged they will not be included in the analysis of the data. Most of these cases have been analyzed in detail in a previous paper [5] and dosages of medication, the complications of the disease and the complications of the various types of treatment were tabulated. Therefore the present report will only summarize a few general items.

Of 153 patients followed for one year 122 were treated with oral or vaginal suppository estrogens (natural or synthetic), 12 with sulfathiazole or sulfadiazine, 10 with a combination of estrogen and a sulfon-

3. Mahoney, J. F.; Van Slyke, C. J.; Wolcott, R. R.; Thayer, J. D., and Nimeiman, A.: Cultural Studies in Chronic Gonorrhea of Women, Am. J. Syph., Gonor. & Ven. Dis. **26**: 38, 1942.

4. Lyons, R. H., and Balberor, H.: Febrile Reactions Accompanying the Readministration of Sulfathiazole, J. A. M. A. **118**: 955 (March 21) 1942. Keefer, C.: Toxic Reactions Following Sulfonilamide Treatment, New England J. Med. **226**: 266, 1942. Nelson, J.: Acquired Sensitivity to Sulfonamide Drugs, J. A. M. A. **119**: 560 (June 13) 1942. Fink, H. W., and Wilson, J. L.: Evaluation of the Dangers of Repeated Administration of Sulfadiazine and Sulfathiazole in Children, J. Pediat. **22**: 513, 1942. Lewis.[5] Cohn, Steer and Adler.[6]

5. Compton, B. C., and Bieren, R. E.: Vulvovaginitis in Children, Bull. Univ. Maryland School Med. **25**: 221, 1941.

amide drug, 6 with Floraquin suppositories or insufflations, 2 with kaolin and sand insufflations and 1 with Floraquin and estrogen.

Since it is obviously impossible to differentiate a recurrence from a reinfection in this series, all will be classified as recurrences.

Of the 122 patients treated with estrogens 33 had a recurrence, 4 before three negative smears were obtained, 8 within three months, 4 between three and six months, 5 between six months and one year, 5 between one and two years and 7 between two and six years.

Of the 12 patients treated with sulfonamide drugs 2 had a recurrence one to two years later.

The 21 children with recurrences occurring before one year all were eventually successfully treated and discharged after one year of negative smears; most of these were cured with estrogens. Furthermore, 17 of the recurrences listed were in 7 children, 3 having three recurrences and 4 having two recurrences. Many of the 17 patients with recurrences between six months to six years after smears became negative undoubtedly represent reinfections rather than recurrences.

Among those patients not followed for one year some immediate failures were noted in patients who were treated with estrogens or with sulfonamide drugs.

EVALUATION OF THE VARIOUS DRUGS

Sulfonamide Drugs.—Effects: The discharge usually diminished in two to three days. The smears usually remained positive at the end of one week but became negative by the end of the second week. No patient was treated with a sulfonamide drug longer than three weeks, and in most instances the drug was stopped by the end of the second week.

Complications: We noted no untoward reactions in any patient treated with either sulfathiazole or sulfadiazine. Before starting the drug all patients were instructed to drink a glass of water each hour while taking the sulfonamide and were warned to stop taking the drug immediately if nausea and vomiting or high fever developed.

Dosage: 1. Sulfathiazole was given orally in a dose of 0.5 Gm. per day to children from 6 months to 1 year of age, 1 Gm. per day to children from 1 to 4 years and from 1.5 to 2 Gm. per day to children between 5 and 10 years.

2. Sulfadiazine was given orally in half the dose for sulfathiazole.

Estrogens.—Effects: The estrogens were used either as suppositories (natural or synthetic) or as oral (synthetic) medication. Both methods proved effective in producing complete cornification of the epithelium, the development of a p_H of 4.5 to 5.5 and a negative smear for gonococci, all of which are important items in order to secure good results. As an extra precaution the drug was continued routinely for a week after the smear became negative. The discharge usually abated in one to two weeks when the synthetic estrogens diethylstilbestrol and dihydrostilbestrol were used and in two to three weeks when the natural estrogenic products were employed. The average time until complete cornification and a negative smear were produced with these synthetic estrogens was fourteen days; the average time with the natural estrogens was about twenty-eight days. In general, the natural estrogens were administered by the vaginal route as suppositories, the synthetic estrogens by the oral or the vaginal route.

Complications: The most common untoward reaction was an effect on secondary sex characteristics, i. e. slight hypertrophy of the breasts, clitoris (indicating androgenic qualities) and labia. This occurred in about 50 per cent of the patients. It was more pronounced and most frequently encountered in the children treated with diethylstilbestrol. A few children developed nausea, slight vaginal bleeding or the appearance of pubic hair. All of these changes receded as soon as the drug was stopped, and no permanent change was noted.

Dosage: Synthetic Estrogens: 1. Diethylstilbestrol was given in the amount of 0.5 mg. a day between 6 months and 1 year and 1 to 3 mg. per day between 1 year and 10 years.

2. Hexestrol (dihydrostilbestrol) was given in a dose four times that of diethylstilbestrol.

Benzestrol was given in a dose about four times that of diethylstilbestrol (the results seem comparable to those of the other synthetic estrogens, but patients have been followed for only a few months).

Natural Estrogens: 1. Amniotin perles, Estriol gelatin capsules, oral estrogenic tablets; all of these agents were administered as suppositories. The average total dosage until complete cornification and a negative smear occurred was approximately 35,000 international units or 35 mg. for each of these.

These products all seemed to supply ample estrogenic properties to produce complete cornification even in the smallest size manufactured.

Where complications would indicate more than a simple localized vaginitis (adenitis, joint involvement, salpingitis) sulfonamide therapy has generally supplemented the estrogen therapy.

Other Agents.—Kaolin and Sand: This was ineffectual in most of the children in whom it was used.

Floraquin: This drug was used both in the form of a suppository daily and as a powder insufflation twice a week. In most of the children in whom it was used it proved ineffectual in producing negative smears.

COMMENT

Benson [1] has aptly stated that the outstanding problem relative to vulvovaginitis of children still remains "the formation of criteria for the diagnosis and cure of vaginitis which would be generally accepted." Following the report of the New York City study,[2] which showed that the cultural method was superior to the smear method in diagnosis and that more cures were reported following the use of sulfathiazole than with estrogens or no treatment, estrogen treatment was generally condemned. Even Lewis, who first introduced estrogens in the treatment of gonococcic vaginitis, ceased using estrogens for the treatment of gonococcic vaginitis and stated that estrogens are valuable for the relief of nonspecific and secondary vaginitis only.[6] However, his clinical management of patients apparently was not changed with the change in treatment,[7] for he also stated that children in New Haven are returned to school while still infected and under treatment, but not with a profuse vaginal discharge.

We have found that in our vaginitis clinic, where 72 per cent of the patients seen have a gonococcic vaginitis, the vaginal smear is a satisfactory method of diagnosis, for of 124 cases diagnosed as nonspecific or caused by something other than the gonococcus only 3 have later been diagnosed as positive for gonococcus

6. Thomas, R. B.: The Gonococcus and Gonococcal Infections, Am. J. Syph., Gonor. & Ven. Dis. **26**: 691, 1942.
7. Lewis, R. M.: The Present Status of the Gonorrheal Vaginitis Problem, Am. J. Syph., Gonor. & Ven. Dis. **25**: 496, 1941.

(1 of these children first became positive two years after the first examination).

It is agreed by most workers in this field that the danger of spread of infection occurs only when the highly infected vaginal discharge is spread by intimate contact. This discharge disappears in about two weeks when the patient is treated with estrogens. Gonococci persist a week or two longer in the stained smear while the patient is continued on estrogens. We feel that if a child is followed until the smear becomes negative the danger of infection and the danger of a recurrence of the highly infected discharge has passed. Treatment may also be carried out with sulfonamide drugs, the discharge usually disappearing within one week when these agents are employed. However, since vulvovaginitis in children is such a benign disease, we feel that the sulfonamide drugs (which occasionally produce a sensitivity) should be reserved for more lethal diseases in which their use is imperative.

By following the child for one year, we are able to note any recurrence of the disease or to note any reinfection. The latter is a distinct possibility if the home is a crowded one and there are other children of similar age. By the end of one year the disease has usually been cured spontaneously [8] if not by the action of the drug used.

SUMMARY

1. Gonococcic vaginitis is a benign disease which can be successfully treated in the outpatient department.

2. In our clinic gonococcic vaginitis accounts for 72 per cent of vaginitis in children.

3. The disease is transmitted by contact with highly infected vaginal discharge.

4. The diagnosis may be made readily, in almost all cases, by direct smear of the vaginal secretions. This is in contrast to the lack of success of the smear method in adult gonococcic infections.

5. The response to treatment can also be followed adequately in most instances by the same method.

6. Because the vaginal discharge is the source of spread, the patient should be isolated in the home as completely as possible until the discharge has disappeared, and preferably until the smear for gonococci is negative, which on continued treatment occurs about a week or two later.

7. Synthetic or natural estrogens, sulfathiazole or sulfadiazine or a combination of these sulfonamide drugs and estrogens have been found highly successful in the treatment of this condition.

8. We believe estrogens to be the drug of choice, because the danger of sensitization of the patient to sulfonamide drugs is always present. The sulfonamide drugs should be reserved for the more lethal diseases so common in childhood, where their use then becomes imperative. Their use in treating vulvovaginitis should be reserved for treating complications (rare) or after estrogenic treatment proves unsatisfactory (relatively rare).

9. Patients in our clinic have been followed at weekly intervals until they have had three negative smears, then at monthly intervals until they have been negative for three months, and at three month intervals thereafter until the smears have remained negative for one year. This method has proved adequate.

8. Cohn, A.: Steer, A., and Adler, E. L.: **Further Observations on Gonococcal Vulvovaginitis**, Am. J. Syph., Gonor. & Ven. Dis. **25**: 329, 1941.

CAUSALGIA

A PRELIMINARY REPORT OF NINE CASES SUCCESSFULLY TREATED BY SURGICAL AND CHEMICAL INTERRUPTION OF THE SYMPATHETIC PATHWAYS

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Burning pain, hyperesthesia and trophic disturbances with their various side effects, resulting from injury to a peripheral nerve, were first grouped as a symptom complex in 1813 by Alexander Denmark, surgeon to Haslar Hospital. He described a typical picture of median nerve causalgia with ulceration of the palm of the hand. Percival Potts before this had referred in his lectures to the intractable pain occasionally resulting from the partial division of a peripheral nerve.[1] Paget in 1864 gave an accurate description of the trophic and secretory phenomena associated with causalgia, saying, in his description of the changes in the hands and fingers, "the fingers are usually tapering, smooth, hairless, almost void of wrinkles, glossy, pink, ruddy, or blotched as if with permanent chilblains." [2] In the same year the term causalgia itself was coined by Mitchell, Morehouse and Keen [3] in an article in which are described their experiences with wounded Civil War soldiers. Their vivid word pictures of causalgia are unsurpassed and still endure as the standard description of the disease. They state:

> Its intensity varies from the most trivial burning to a state of torture which can hardly be credited but reacts on the whole economy until the general health is seriously affected. The part itself is not alone subject to an intense burning sensation but becomes exquisitely hyperesthetic, so that a touch or a tap of the finger increases the pain. Exposure to the air is avoided by the patient with a care which seems absurd, and most of the bad cases keep the hand constantly wet, finding relief in the moisture rather than in the coolness of the application. . . . He [the patient] walks carefully, carries the limb tenderly with the sound hand, is tremulous, nervous and has all expedients for lessening his pain.

The literature on the subject since then has occupied itself in the main with discussions of the etiology and therapy of this painful affliction. The theories relating to the pathogenesis of this disease are legion. Neuritis ascending from the point of injury [3] and abnormal vasomotor reflexes [4] have been presented as etiologic agents. According to Fuchs, causalgia is due to irritation of the peripheral sympathetic plexus. The afferent pathways of the sympathetic system terminate in the gray substance of the thalamus, where all sensory and sensitive stimuli are collected. The permanent irritation of the sympathetic system will then cause an increased charge of the gray substance of the thalamus, and finally any stimulus, be it tactile, sensory or even imaginative, will produce the sensation of pain.[5]

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Dr. Percival Bailey gave valuable help in the preparation of this manuscript.
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1. Gask, C. E., and Ross, J. P.: The Surgery of the Sympathetic Nervous System, Baltimore, William Wood & Co., 1934.
2. Cited by Wilson, S. A. K.: Neurology, Baltimore, Williams & Wilkins Company, 1940.
3. Mitchell, S. W.; Morehouse, G. R., and Keen, W. W.: Gunshot Wounds and Other Injuries of Nerves, Philadelphia, J. B. Lippincott Company, 1864.
4. Leriche, R., and Policard, A.: Physiologie pathologique chirurgicale, Paris, Masson & Cie, 1930.
5. Fuchs, A.: Durch Entfernung sympathischer Ganglien und des zugehörigen Grenzstranges schlagartig geheilte Kausalgien, Deutsche Militärarzt **6**: 277-280 (May) 1941.

Stimulation of a hitherto unrecognized set of "nocifensor nerves," belonging to the posterior root system with a consequent lowering of the threshold of the ordinary sensory apparatus, has been advanced as a cause by Lewis.[6] Kinnier Wilson postulates some anatomic or biologic peculiarity of certain afferent neuronic systems whereby, more readily than others, they become the seat of neurologic disorders . . . and that any lesion of such a nerve should (theoretically) involve efferent fibers in that system the function of which is to damp down peripheral stimuli and protect against overbombardment.[2] Dragonesco and Kreindler[7] have stated that causalgia is "an expression of sensory hypertonicity." These and several other ideas all have convincing aspects but fail to satisfy all the criteria of the disease entity, and "all that emerges from these theories as reasonably certain is that abnormal vasomotor activity usually accompanies the pain."[8]

The therapy of causalgia is aimed at one of three expedients—removal of the cause of irritation to the nerve, interruption of the afferent pathway in the peripheral nerve and finally interruption of the sympathetic supply of the extremity.

Removal of irritation to the nerve is accomplished by neurolysis or removal of adjacent foreign bodies. The case of Alexander Denmark, already described, was treated successfully by removal of a piece of shot lying close to the nerve. This procedure is still employed and is occasionally successful in the milder involvements but does not serve for the more severe and inveterate cases. Livingston[9] has reported the cure of several cases by injection of the local "trigger point" with procaine hydrochloride. If such a point exists it is certainly worth trying. However, in our series we were unable to locate any trigger points. Interruption of the afferent pathway has been performed in several ways with moderate success, especially in the less severe cases. Kinnier Wilson[2] reports gratifying success with resection and suture of the nerve. Section of the painful nerve, rhizotomy and even chordotomy have been suggested.[10] In 1916 Sicard[11] described the successful treatment of 21 cases of causalgia by injection of 60 per cent alcohol into the involved nerve above the site of irritation. Although he claimed that 60 per cent alcohol affected only the sensory nerve fibers, this has not always been the case, and complete motor paralysis of the injected nerve has resulted. Obviously, therefore, this is not the method of choice in a nerve containing many motor elements if other therapeutic procedures can be performed successfully. If, on the contrary, the nerve in question is composed mainly of sensory elements with few motor elements, this, or the technic of crushing the peripheral sensory nerves supplying the foot, can be employed. White and Smithwick[8] report good success with this method but admit that it frequently fails.

Interruption of the sympathetic supply of the extremity by periarterial sympathectomy was first advocated by Leriche[12] in 1913. Since the sympathetic supply to the blood vessels is not through a continuous perivascular sympathetic system but through the adjacent nerves which distribute branches to the vessels along their course,[13] it is difficult to understand how uniformly good results could be obtained. Whatever the reason, it is well known that periarterial sympathectomy is only occasionally successful and very frequently unsuccessful. This type of sympathectomy is gradually being supplanted in this country by direct surgical and chemical attack on the glanglionated sympathetic chain. Numerous cases of causalgia successfully treated by surgical sympathectomy have been reported in the last fifteen years (Spurling,[14] White,[8] Gask and Ross,[1] Kwan,[15] Fuchs,[5] Wan,[16] Slaughter[17]).

Livingston[18] in 1938 and Homans[19] in 1940 published their results following injection of the region of the sympathetic ganglion with a local anesthetic. Their results were excellent, and the technic appears to be of great value therapeutically, especially in the less severe cases. It is of equal value diagnostically in establishing a dependable criterion as an indication for surgical sympathectomy.

Of those reporting successful treatment of causalgia by surgical sympathectomy, the majority, even in the very recent reports,[20] have performed postganglionic rather than preganglionic sections (in the upper extremity). An obvious disadvantage of this is the development of a disfiguring Horner's syndrome. Less obvious but more disadvantageous is the fact that following postganglionic section there is increased sensitization to circulating epinephrine and sympathin. Furthermore it has been shown that preganglionic sympathectomy causes a more effective and lasting sympathetic paralysis.[21] In this series of cases for sympathectomization of the involved upper extremities the muscle splitting approach of White and Smithwick[8] was employed. This method successfully decentralizes the second and third dorsal sympathetic ganglions but leaves the stellate ganglion intact, thus effecting a preganglionic sympathectomy. Preganglionic sympathectomization of the lower extremity was carried out, employing the retroperitoneal approach described by Royle[22] in 1925. This

6. Lewis, T.: The Nocifensor System of Nerves and Its Reactions, Brit. M. J. **1**: 431-435 and 491-494, 1937.

7. Dragonesco, S., and Kreindler, A.: Sur les rélations entre le système végétatif et la sensibilité (A propos d'un cas de causalgie), Rev. neurol. **2**: 662-671, 1931.

8. White, J. C., and Smithwick, R. H.: The Autonomic Nervous System, New York, Macmillan Company, 1941.

9. Livingston, W. K.: Pain Mechanisms: A Physiological Interpretation of Causalgia and Its Related States, New York, Macmillan Company, 1943.

10. Adson, A. W.: Neurosurgical Treatment of Muscular Spasms and Spastic Painful Trophic Lesions of the Extremities, S. Clin. North America **13**: 895-904 (Aug.) 1933.

11. Sicard, J. A.: Traitement des névrites douloureuses de guerre (causalgie) par l'alcoolisation nerveuse locale, Presse méd. **24**: 241-243, 1916.

12. Leriche, R.: De l'elongation et de la section des nerfs périvasculaires dans certain syndromes douloureux d'origine artérille et dans quelque troubles trophiques, Lyon chir. **10**: 378-382, 1913.

13. Stookey, Byron: Surgical and Mechanical Treatment of Peripheral Nerves, Philadelphia, W. B. Saunders Company, 1922. Sheehan, D.: On Innervation of Blood Vessels of the Upper Extremity: Some Anatomical Considerations, Brit. J. Surg. **20**: 412-424, 1933.

14. Spurling, R. G.: Causalgia of the Upper Extremity: Treatment by Dorsal Sympathetic Ganglionectomy, Arch. Neurol. & Psychiat. **23**: 784-788 (April) 1930.

15. Kwan, S. T.: The Treatment of Causalgia by Thoracic Sympathetic Ganglionectomy, Ann. Surg. **101**: 222-227, 1935.

16. Wan, F. E.: Sympathetic Causalgia: Report of 20 Cases Treated by Sympathectomy, Chinese M. J. **61**: 1-13 (Jan.-March) 1943.

17. Slaughter, R. F.: Relief of Causalgic-like Pain in the Isolated Extremity by Sympathectomy: Case Report, J. M. A. Georgia **27**: 253-256 (July) 1938.

18. Livingston, W. K.: Fantom Limb Pain: A Report of 10 Cases in Which It Was Treated by Injections of Procaine Hydrochloride Near the Thoracic Sympathetic Ganglions, Arch. Surg. **37**: 353-370 (Sept.) 1938. Adson, A. W.: Neurosurgical Treatment of Muscular Spasms and Spastic Painful and Trophic Lesions of the Extremities, S. Clin. North America **13**: 895-904 (Aug.) 1933.

19. Homans, J.: Minor Causalgia: A Hyperesthetic Hemovascular Syndrome, New England J. Med. **222**: 870-874, 1940.

20. Kwan.[15] Fuchs.[5] Wan.[16] Spurling.[14] Gask and Ross.[1]

21. Ascroft, P. B.: The Basis of Treatment of Vasospastic States of the Extremities: An Experimental Analysis in Monkeys, Brit. J. Surg. **24**: 787-816, 1937. Simmons, H. T., and Sheehan, D.: The Causes of Relapse Following Sympathectomy of the Arm, Brit. J. Surg. **27**: 234-255, 1939. White and Smithwick.[8]

22. Royle, N. D.: The Treatment of Spastic Paralysis by Sympathetic Ramisection, Surg., Gynec. & Obst. **39**: 701-720, 1924.

method effectively exposes the lumbar sympathetic chain for resection of the second and third ganglions. The first lumbar ganglion is generally spared in order not to jeopardize the ejaculatory function in males. The approach through the trigonum lumbale is relatively easy. It has been adequately described [22] and its efficacy proved in large series of cases.[23]

One of us has had under his care in the last year 275 cases of unselected peripheral nerve injuries. Of these, 9 cases followed the pattern of intractable causalgia. In view of the relative infrequency of this syndrome and the uniform success attendant on interruption of the sympathetic chain by chemical or surgical means, these cases are now collected and presented as a preliminary report.

REPORT OF CASES

CASE 1.—A. U. K., aged 23, an unmarried private in the field artillery, was wounded in the right shoulder by a 0.25 caliber bullet on Jan. 4, 1944. The bullet entered the anterior fold of the axilla and left through the posterior axillary fold, following which it continued through the posterior aspect of the upper third of the arm in a downward direction, finally leaving the arm at the junction of the middle and upper thirds posteriorly. Immediately after the injury he noted paralysis and numbness of the entire hand and wrist. Two days later he noted the onset of a severe burning pain beginning on the ulnar side of the wrist and proceeding distally along the palmar and volar surfaces of the hand into the ring and little finger. The pain was much aggravated by immersion of the hand in hot water and alleviated by immersion in cool water. It was also increased by any movement of the hand or fingers and by friction against the involved skin area. On February 20 the right axilla was explored at an overseas hospital and "damage to the right brachial plexus and axillary artery found." No further information is available.

On admission the entire arm, forearm and hand were in a half cast, which the patient consistently refused to abandon because of his fear of the consequences of exposure of his hand to jostling. His facies was drawn and there was evidence of much weight loss. The hand was carefully guarded, following removal of the cast. All the fingers were swollen and tapering. The skin of the hand was thin, red, shiny, almost hairless and perspiring profusely. Any movement or manipulation was resented. He refused to allow the hand to be washed. The wounds were well healed. The musculature of the right arm and of the flexor surfaces of the forearm was considerably atrophied, as were also the interosseous spaces and the thenar and the hypothenar eminences. There was pronounced ankylosis of the wrist and partial ankylosis of all the interphalangeal joints. There was complete paralysis of movement of the wrists and fingers in any direction and about 50 per cent paralysis of the biceps, brachialis and triceps. Hypesthesia to all the modalities of sensation in the ulnar distribution and hypesthesia to light touch and stereognosis in the median nerve distribution were present. There was hyperesthesia to painful stimuli over the entire hand. Radial nerve sensation was intact. Percussion over the axillary wound yielded a tingling sensation radiating to all the fingers and the thumb. This percussion caused no change in the quality or severity of the pain in the hand. The right radial pulse was almost completely gone. On May 3 a right dorsal sympathetic block with injection of 6 cc. of 2 per cent metycaine at the first and second dorsal vertebrae was performed. There was immediate complete relief from pain lasting for three hours accompanied by an increased warmth of the entire upper extremity and a right Horner's syndrome. On May 12 a similar procedure gave relief for only one and one-half hours. On May 23 a right dorsal sympathectomy employing the technic of White and Smithwick was performed under nitrous oxide-ether anesthesia with an endotracheal tube in place. The second and third sympathetic ganglions were decentralized, and the decentralized chain was sutured into the rhomboid muscle, following section of the rami communicantes and of the second and third intercostal nerves just lateral to the intervertebral foramens. Silver clips were placed on the cut ends of the chain. The postoperative period was uneventful.

Immediately after operation there was complete relief of spontaneous pain and complete relief from pain on manipulation of the hand and on immersion in hot water. For about one hour following operation the right hand was actually cooler than the other. In two hours the hand became warm and remained so for four days, at the end of which time it became almost as cool as the normal extremity. This persisted for three days, after which it was noted that the involved hand became slightly warmer than the other and has remained so ever since. The patient is quite comfortable and has gained 15 pounds (7 Kg.) in weight.

The radial pulse is stronger. The skin is less shiny, the swelling of the fingers has diminished and the extremity does not perspire. The patient can now move the wrist and fingers slightly in all directions. The latter improvement is doubtless due to the fact that he is no longer resisting movement and is accepting physical therapy. Reexploration of the brachial plexus is being contemplated if motor power does not continue to improve. There is no evidence of a Horner's syndrome, but the right side of the face does not perspire.

CASE 2.—E. G. D., aged 29, an unmarried corporal in the field artillery, was struck by shell fragments in the chest and in the right upper forearm on April 8, 1944. The wound in the forearm was perforating, entering the medial and leaving the anterior surface of the upper forearm. The wounds were debrided on the same day. Following the injury there was noted immediate partial paralysis of the right hand and continuous burning, stabbing pain in the entire hand, much more severe on the dorsum of the hand and all the fingers except the little one, and least severe on the ulnar side of the hand and in the little finger. The pain was much aggravated by heat and by any type of movement or massage of the skin.

The patient was admitted to the hospital on May 23. Although there was no injury to the legs or any systemic illness, he was admitted on a litter because of his opposition to even the slightest movement or manipulation of the right hand. His facies was drawn with pain and there was evidence of much loss of weight. He guarded the hand very carefully, not allowing ordinary cleansing care and insisting on having an ice pack on it at all times. Examination revealed well healed wounds in the upper forearm, one on the medial side and one on the anterior surface. Percussion over the medial wound caused a tingling sensation radiating in the usual ulnar distribution, with a similar phenomenon in the median nerve distribution on percussion over the anterior wound. The skin of the entire right hand was red, shiny, dirty and scaly, and it perspired freely. Atrophy of the interosseous spaces and the thenar and hypothenar eminences was present. The fingers were swollen and tapering. There was almost complete loss of hair over the dorsum of the index and middle fingers. There was weakness of adduction of the right thumb, abduction and adduction of all the fingers and flexion of the little and ring finger. Anesthesia to all the modalities of sensation in the ulnar distribution of the hand and diminished sensation to light touch and stereognosis in the median nerve distribution were noted. Hyperesthesia in the median nerve distribution was present. The radial pulse was normal. On June 5 a right dorsal sympathetic block was performed employing the technic described in case 1. Immediately after block an increase in the temperature of the hand, complete loss of pain and the development of Horner's syndrome were noted. All these effects disappeared in about ninety minutes. On June 20 a right dorsal sympathectomy was performed under intratracheal anesthesia, employing the technic described in case 1. Immediately following the operation there were

23. Stewart, S. T.: The Surgery of the Sympathetic Nervous System: Operative Notes Based on 273 Operations, Ann. Surg. 97: 485-493, 1933. White and Smithwick.* Royle.**

complete loss of pain and considerable increase in the temperature of the hand. Four days after operation it was noted that the hand was cooler than the hand on the unoperated side. This persisted until the seventh postoperative day, when the hand became somewhat warmer and has remained so until the present. An interesting postoperative complication was the development of a pneumomediastinum and a slight right pneumothorax, which disappeared in seven days. The pain is still completely absent and cannot be brought on by immersion in hot water or by manipulation. The extremity does not perspire, and the skin is no longer cracked, although it is still red. The fingers are not as swollen as on the initial examination. The sensory findings are unchanged. There has been some improvement in ulnar nerve function, apparently due to an increase in the patient's willingness to accept physical therapy. The patient is ambulatory and has gained 8 pounds (3.6 Kg.) in weight. His face has lost its strained appearance. Exploration of the ulnar and median nerves is being contemplated.

CASE 3.—J. F. B., aged 27, a married infantry private first class, was struck by shell fragments in the left shoulder region on May 25, 1944. The wound was debrided on June 3 at an overseas hospital and has been slowly healing since then. Immediately after the injury the patient noted complete paralysis of the entire left upper extremity and immediate onset of continuous, severe, burning pain on the volar and dorsal surfaces of the forearm, hand, all the fingers and the thumb. The pain was much aggravated by stroking, by manipulation and by heat. The patient guarded movement of the limb so carefully that he developed a decubitus ulcer over the medial epicondyle.

He was admitted to the hospital on July 10. As in case 1, a litter was used in transportation to facilitate the guarding of his left hand. There were healing granulating wounds in the anterior and posterior folds of the left axilla. The patient's face was drawn with pain, and he persistently resisted even the slightest movement of the extremity necessary in the examination. There was a decubitus ulcer over the medial epicondyle, with a necrotic center. The only spontaneous movement the patient was capable of, or was willing to do, was a slight elevation and forward thrust of the left shoulder joint. Surprisingly little atrophy of the extremity, except for slight atrophy of the hypothenar eminence, could be demonstrated. There was pronounced diminution of all the modalities of sensation in the ulnar distribution to the hand. Sensation was otherwise intact. There was hyperesthesia in all but the ulnar distribution of the hand. The entire forearm and hand perspired very freely. The skin was reddened, scaled, cracked and exceedingly soiled. The finger tips were shiny. The fingers and hand were swollen and edematous. The slightest attempt at movement caused excruciating pain. On July 12 a left dorsal sympathetic block was performed using the technic described in case 1. This was followed by immediate complete relief of pain, increased temperature of the left upper extremity and a Horner's syndrome on the left. These findings lasted about eighty minutes, following which the pain returned with its original severity. On July 14 a left dorsal sympathectomy was performed, employing the technic described in case 1. For fifteen minutes following the section the temperature of the left hand remained the same as before. Following this it became much increased for forty-eight hours, at the end of which time it cooled perceptibly for thirty-six hours. Since then the extremity has been consistently warmer than the normal side. Immediately following operation there was complete relief from pain. The pain could not be brought on by immersion in hot water, friction or manipulation. The skin of the hand has now resumed an almost normal appearance, and the decubitus at the elbow has healed. The patient is now ambulatory and quite comfortable. There is slight returning function (with physical therapy) in flexion and extension of the shoulder, elbow, wrist and fingers. It is felt that this is entirely due to the patient's willingness to move the extremity. There has been no change in sensation. Exploration of the brachial plexus and of the ulnar nerve lying under the decubitus is being contemplated.

CASE 4.—M. P. B., aged 21, an unmarried infantry private, was struck on the medial aspect of the right lower arm by shell fragments on Jan. 29, 1944. On the same day the wound was debrided and the shell fragment removed. Immediately following his injury the patient noted partial paralysis of the right hand in the ulnar distribution. About six days following the injury he noted the onset of mild steady, burning pain in the dorsum of the hand and over the dorsum of the ring and middle fingers. As time went on the pain became increasingly severe, was aggravated by heat and motion and frequently interfered with sleep.

On admission to the hospital the wound was seen to be well healed. There was anesthesia to all the modalities of sensation over the medial side of the palm of the hand, the ring and little finger on the volar and dorsal surfaces. There was a fringe of hypesthesia surrounding the lower portion of this anesthetic patch. No hyperesthesia was present. Paralysis of adduction of the thumb, abduction and adduction of the fingers and flexion of the little and ring finger could be demonstrated. The hand showed no evidence of vascular involvement. The patient complained of the pain described. The skin over the dorsum of the hand was red, cold, thin and hairless over the dorsum of the fingers. There was atrophy of the thenar eminence, the hypothenar eminence and the interosseous spaces. On April 26 an external and internal neurolysis of the right ulnar nerve was performed in the lower third of the arm. About 2 inches above the medial epicondyle a large neuroma occupying the lateral four fifths of the nerve was found. Electrical stimulation showed 20 per cent function in the intrinsic muscles of the hand following internal and external neurolysis. The nerve was surrounded by tantalum foil and transposed anteriorly. Following surgery improvement in motor function was apparent, but there was no change in sensation and the pain continued with its original intensity. On June 27 a cervicodorsal sympathetic block was performed using the technic described in case 1. An immediate Horner's syndrome, increased temperature of the extremity and complete loss of pain developed. The Horner's syndrome disappeared in two and one-half hours, as did also the increased skin temperature. However, the relief from pain persisted for six days. The pain recurred with increased intensity immediately following a hot bath. On July 13 the cervicodorsal sympathetic block was repeated, and this time relief from pain lasted two days. On July 16 another block was done, and the relief obtained lasted only two hours. A Horner's syndrome was observed with each block. On July 18 an upper dorsal sympathectomy was performed, employing the technic described in case 1. Following operation there was immediate complete relief from pain, which has persisted. For one hour following operation the temperature of the sympathectomized hand remained only slightly elevated, but in an hour it became quite warm. This persisted for five days. On the fifth day the hand became cooler than the normal extremity and then slowly became warmer, so that on the seventh postoperative day it was a good deal warmer than the other hand. This has persisted. There is no evidence of a Horner's syndrome. There has been no change in the appearance of the skin. The patient now tolerates physical therapy and has shown a decided improvement in motor function.

CASE 5.—F. P. W., aged 34, an unmarried infantry sergeant, was struck in the left supraclavicular area by a machine gun bullet on March 8, 1944. This resulted in immediate complete paralysis and numbness of the entire left upper extremity, with severe boring, burning pain along the posterior aspect of the arm, the dorsum of the forearm radiating down to the dorsum of the thumb and the first interosseous space. Hemoptysis was noted for one week following the injury. Over a period of eight weeks following the injury there was gradual complete recovery of motor and sensory function in the entire upper extremity. The pain, however, became increasingly severe and sharp. It was not aggravated by temperature or rubbing of the skin but was aggravated by movement. At this time the

pain centered in the posterior aspect of the arm, in the thumb and on the dorsum of the first interosseous space. By June the pain had disappeared from the arm but persisted with increasing severity in the dorsum of the thumb and first dorsal interosseous space. Physical examination revealed a well healed wound in the left supraclavicular area. There was no evidence of sensory or motor paralysis. The skin of the left hand was red, scaly and dirty. Pronounced hyperesthesia over the dorsum of the thumb was present. On July 15 a cervicodorsal sympathetic block was attempted. However, since the patient had an attack of syncope during the procedure, it was discontinued. On July 18 a successful sympathetic block was accomplished with a Horner's syndrome, increased temperature of the extremity and complete relief of pain lasting for ninety minutes. Following this procedure the patient requested sympathectomy. On July 20 an upper dorsal sympathectomy was performed employing the technic described in case 1. Following operation there was immediate onset of increased skin temperature which has persisted without diminution to the present time. The pain has been completely relieved and cannot be brought on by manipulation changes in temperature or skin friction.

CASE 6.—V. H. M. aged 33, an unmarried infantry private, was struck by machine gun bullets on Feb. 8, 1944 in the left upper arm and chest, sustaining a compound comminuted fracture of the left middle third of the humerus. The wounds were debrided the same day and a hanging cast applied to his left arm. When the cast was changed on February 15 the patient noted a partial paralysis of the hand and wrist. About the first week in March the patient noted severe pain in the dorsum of the hand and fingers and over the volar surfaces of the thumb, index and middle fingers. The pain was hot and burning in character, much aggravated by friction of any object against the skin and by active or passive movement of the extremity. It was not affected by temperature change. On May 14 the patient was admitted to the hospital, where examination revealed hyperesthesia to all the modalities of sensation over the entire volar and dorsal surfaces of the hand and thumb. Because of the severe pain on movement it was impossible to judge the degree of paralysis of the hand, but there was obvious weakness of dorsiflexion of the wrist, fingers and thumb along with weakness of flexion of the thumb, index and middle finger. The fingers and palm were scaly, dirty and peeling. There was no abnormality of the color or hair. The hand perspired freely. There was no evidence of vascular injury. On June 19 a left cervicodorsal sympathetic block was performed, using the technic described in case 1. Immediately following the block there was a complete disappearance of all the pain. The pain could not be brought on by movement of the hand or by friction. For six hours following the block there was increased skin temperature of the left upper extremity and a left Horner's syndrome. The patient was able to tolerate physical therapy, and in a few days there was remarkable recovery of function. Volar and dorsiflexion of the wrist, fingers and thumb became almost normal, and sensation returned to all but the dorsum of the thumb and first interosseous space. On July 10 a slight dull pain in the dorsum of the thumb appeared and has been present ever since. The pain is evanescent and minimal and the patient does not desire any further treatment for it, although previous to the block he had pleaded for relief. Further treatment is not considered to be indicated at this time.

CASE 7.—L. F. C., aged 21, an unmarried infantry sergeant, was struck in the left shoulder and right dorsal region by land mine fragments on March 11, 1944. He bled very freely from the wound and was given multiple transfusions. On the same day the wound was debrided and the clavicle cut across to facilitate the tying off of the blood vessels. A severe hemopneumothorax developed on the left side, for which thoracentesis was performed twice in March. At the end of March the chest was apparently clear. Immediately following the injury, complete paralysis of the entire left upper extremity was noted. Three days following the injury the patient noted the onset of extremely severe, burning pain on the volar surface of the hand, the thumb and all the fingers, less severe in the corresponding dorsal areas. The pain was decidedly aggravated by the slightest touch on the skin and by any movement, either active or passive. It was alleviated by immersion of the hand in warm water and aggravated by immersion in cold water. On May 17 the patient was admitted to the hospital. His upper extremity was immobilized in a modified Thomas leg splint to prevent any movement. He walked with his right hand held in front of the left to prevent any accidental collision. His features were drawn, and there was evidence of weight loss. He resented bitterly the slightest manipulation of the extremity. There were well healed wounds over the right clavicle and about 2 cm. to the right of the third dorsal spine. The fingers were swollen and tapering. The skin of the fingers and hand was pink, cool and moderately hairless and it perspired freely. There was pronounced hyperesthesia over the lateral surface of the arm and hand and hyperesthesia over the entire hand, forearm and lateral surface of the arm. Complete absence of voluntary movement of the left upper extremity was noted. The radial pulse was normal.

On May 22 a left cervicodorsal sympathetic block was performed. It was followed by increased skin temperature of the extremity, a left Horner's syndrome and complete disappearance of the pain except on vigorous manipulation of the hand. This relief lasted for two hours. On May 28 left dorsal sympathectomy by the method described in case 1 was attempted. On resecting the heads and necks of the second and third ribs, the pleura in this region was seen to be absent and replaced by scar tissue intimately adherent to the lung, ribs, intercostal muscles and vertebral bodies. Further procedure was considered injudicious, and the wound was closed. No relief was obtained from this operation. On July 12 a repeat sympathetic block was performed with metycaine. The stellate ganglion was injected with 6 cc. of metycaine, and an immediate Horner's syndrome developed. On blocking the second thoracic vertebra, a metycaine reaction developed with considerable apprehension, palpitations and generalized tremors. No more metycaine was injected, and the reaction rapidly disappeared. The pain was completely gone for a period of three hours. On July 18 the second and third dorsal ganglions were injected with 2 cc. of alcohol in each segment. The pain disappeared completely even on rubbing the skin and manipulating the hand. It has not returned since. The patient is now taking physical therapy, and motion is returning to the elbow, wrist and fingers. The glossy appearance of the skin of the hand is still present, but it is much warmer than prior to the block. The patient is quite comfortable and has gained weight. Exploration of the brachial plexus is being contemplated.

CASE 8.—J. W., aged 24, an unmarried infantry private, was struck by land mine fragments in the medial side of the left thigh and leg on Feb. 6, 1944. The wound in the thigh bled very freely, and when it was debrided the following day it became necessary to ligate the femoral artery. Immediately following the injury the patient noted numbness of the medial side of the left leg and foot. One day after the injury he noted the onset of severe burning pain along the medial side of the foot, ankle and leg, aggravated by cold weather or cold water. On admission, May 1, a well healed, deep scar on the medial side of the left thigh and a deep granulating wound in the calf of the left leg were present. There was a partial foot drop due to shortening of the gastrocnemius muscle and hypesthesia along the medial aspect of the leg, ankle and foot. The patient complained bitterly of the pain, but there was no hyperesthesia or pain in handling the extremity. The skin of the left foot was cold, perspiring freely, red, shiny and cracked. There were numerous ulcers over the foot and the toes. Dry gangrene of the terminal two phalanges of the great toe was evident. Neither the dorsalis pedis nor the posterior tibial artery was palpable. On May 10 left lumbar sympathetic block with metycaine at the first, second, third and fourth lumbar vertebrae was

performed. There was immediate complete relief from pain, and the leg and foot became warmer. This lasted for fifteen hours. The block repeated on May 17 was successful also, but the effects lasted only ninety minutes. A series of four such blocks within the next few days successfully stopped the pain for only thirty minutes each. On May 26 a left lumbar sympathectomy was performed under nitrous oxide-oxygen-ether anesthesia employing the technic of Royle.[22] The second and third lumbar sympathetic ganglions were exposed retroperitoneally and resected. The first ganglion was spared in order not to endanger the ejaculatory mechanism. Immediately following the operation there was complete relief from pain, which has persisted to the present time. All the ulcers have disappeared. The extremity is much warmer. The skin does not perspire. The gangrenous toe formed a sharp line of demarcation between healthy and neurotic tissue. With the clearing up of the ulcers and the gangrene, physical therapy became possible and has improved decidedly the function of the leg. The ejaculatory mechanism is intact.

CASE 9.—E. H. C., aged 26, a private in the field artillery, was struck by shell fragments in the upper right arm, sustaining a compound fracture of the humerus on July 25, 1943. The wound was debrided the same day at an overseas hospital and a cast applied. Immediately following the injury the entire upper extremity was completely paralyzed, but when the cast was removed eight weeks later it was noted that all function had returned except flexion of the thumb and the index and middle fingers. Immediately following and ever since the injury the patient had severe burning pain involving the index and middle fingers of the right hand on the volar aspect and the terminal phalanges of these fingers on their dorsal aspects. The pain was aggravated by changes in temperature, by friction or by manipulation. He was able to return to a limited type of duty within a few weeks after returning to the zone of the interior, but the pain continued and became increasingly severe. He was admitted to this hospital on July 2, 1944. Physical examination revealed a large well healed scar on the anterolateral aspect of the right upper arm and a much smaller scar on the lateral wall of the right axilla. Percussion over the latter wound caused a tingling to radiate to the thumb and to the index and middle fingers of the right hand with no increase in the pain. The skin over the medial side of the volar surface of the right hand and the index and middle fingers was pink, shiny, cold and perspiring freely. There was no change in the distribution of the hair. There was moderate weakness of flexion of the thumb and the index and middle fingers and hypesthesia over the volar aspect of the thumb, the radial side of the palm and the index and middle fingers. The hypesthesia extended over to the dorsal surface of the first phalanx of the index and middle fingers. There was no hyperesthesia. On July 5 the right median nerve was explored in the axilla and found to be involved in heavy scar with no evidence of neuroma. The nerve was freed from scar and surrounded with a tantalum cuff. Following this operation there was no change in the patient's pain, but there was some increase in power of flexion of the index finger and the thumb. On July 13 a right cervicodorsal sympathetic block with metycaine was performed with resultant complete relief of pain, increase in skin temperature and a Horner's syndrome lasting for two and a half hours. On July 15 the block was repeated with similar results lasting only ninety minutes. On July 17 a right dorsal sympathectomy was performed with the technic described in case 1. Following the operation the patient has noted complete relief from pain. Immediately following the operation there was a decided increase in the skin temperature, which diminished on the fourth postoperative day so that the extremity was the same temperature as the normal side. On the sixth postoperative day the skin temperature rose again and has remained moderately elevated to the present time. There has been no change in the color or appearance of the extremity. There is no evidence of a Horner's syndrome.

COMMENT

A study of these cases yields the following findings:

1. Of the 9 cases, 8 were in the upper extremity and 1 in the lower. Two were due to involvement of the entire brachial plexus, 2 to involvement of the ulnar nerve, 1 to involvement of the median nerve, 1 to involvement of both median and ulnar nerves, 2 to involvement of the radial nerves and 1 due to involvement of the saphenous nerve. Other writers have found the median and tibial nerves to be the most frequently involved.

2. Injury to a nerve varying in degree from minor involvement insufficient to cause sensory or motor changes to profound destruction of the entire brachial plexus invariably preceded the onset of symptoms.

3. Concomitant injury to a blood vessel frequently occurs. However, in view of the development of identical symptoms without vessel damage it is difficult to agree with those writers who postulate injury to the blood vessel as a necessary part of the clinical picture.

4. Hot, burning pain of varying degrees of severity was present in all cases. In some cases it was aggravated by heat; in 1 case it was relieved by heat. In 5 instances pain was relieved by cool applications. Most of the patients resented any movement of the extremity and guarded against this assiduously. In only 1 case was the pain aggravated by coughing and sneezing. There were no instances of increased pain with emotional stimuli or loud noises as described by previous writers.[24] Alloparalgia or exactly similar pain in the opposite limb was not seen in any of the patients. Five patients had a characteristic drawn, suffering appearance of the face with loss of weight. The time interval between the injury and the onset of the pain varied from less than an hour to three weeks.

5. In 6 cases hyperesthesia was present in the involved areas.

6. In none of the cases did the sensory deficit outline the area of causalgia.

7. All the patients had red, cold, profusely perspiring skin. In 4 the skin was cracked, scaly and dirty because of refusal to allow ordinary cleansing care. In 7 cases there was diminution in the amount of hair on the involved extremities. In 1 case the extremity was held motionless so long that a decubitus ulcer developed.

8. In 2 cases careful neurolysis produced no change in the nature or degree of pain, in spite of postoperative improvement in function.

9. Percussion over the involved nerve at the site of injury invariably caused a radiating tingling in the distribution of the nerve, but in none of the patients was any change noted in the nature or degree of the pain. This would seem to indicate that local irritation of scar or foreign body is not the primary cause of causalgia, especially since neurolysis so rarely relieves the pain.

10. In behavior in the ward and previous behavior in combat, there was no evidence in any of the cases of a personality disorder.

11. All patients showed x-ray evidence of decalcification of bone varying in degree in the involved extremity.

12. All patients were relieved completely for variable periods of time by sympathetic block of the extremity.

13. Seven patients were completely and thus far permanently relieved of pain by surgical sympathectomy.

24. Fuchs.[5] Mitchell, Morehouse and Keen.[3]

14. Of the remaining 2 patients, 1 (patient 6) was almost completely relieved by one procaine block. Patient 7, for whom sympathectomy was not done for technical reasons, has been completely relieved over a period of four and one-half months by alcohol block of the involved sympathetics.

15. All but one of the upper dorsal sympathectomies followed the usual skin temperature course of a rapid rise lasting for two or three days followed by a drop lasting one or two days, in turn followed by an increase smaller than the initial one but remaining thus far permanently. All patients showed complete disappearance of sweating of the involved limb. In none of the dorsal sympathectomies did a Horner's syndrome develop following surgery. In the lumbar sympathectomy the ejaculatory mechanism remained intact.

CONCLUSIONS

1. In an unselected series of 275 peripheral nerve injuries, 3 per cent presented the picture of causalgia.

2. The syndrome followed injury to all or any of the major nerves of the upper extremity. In spite of numerous lower extremity nerve injuries, only 1 case of lower limb causalgia occurred.

3. Injury to a blood vessel frequently accompanies nerve injuries in causalgia but is not a necessary concomitant of nerve injury in the production of causalgia.

4. The most constant symptom of causalgia is hot burning pain aggravated by movement and friction.

5. The most constant findings are a shiny, cold, profusely perspiring and frequently cracked skin in the involved extremity with hyperesthesia occurring in most of the cases. X-ray evidence of decalcification of the involved extremity is frequently seen.

6. The pain does not appear to be due to the continuous irritation of scar or foreign body.

7. The degree and quality of the pain are in no way commensurate with the type and extent of injury.

8. The sensory deficit does not delineate the area of pain, but the two frequently shade into each other.

9. Personality disorders and hysteria are the result rather than the cause of causalgia.

10. Neurolysis is not a useful procedure in the treatment of causalgia per se, although it may be necessary in the treatment of the specific nerve deficit.

11. It is injudicious to subject the patient to a series of operations ranging through neurolysis, nerve section and periarterial sympathectomy before attempting chemical and surgical interruption of the sympathetic pathways.

12. Interruption of the sympathetic pathway, temporarily by sympathetic block or permanently by surgical sympathectomy, is a highly dependable form of treatment for causalgia. In the upper extremity it is not necessary to remove the stellate ganglion for effective control of the pain.

13. Sympathectomy should not be performed until a series of diagnostic sympathetic blocks has proved the efficacy of interruption of the sympathetic pathway.

14. Occasionally the pain of causalgia can be more or less permanently controlled by sympathetic block with local anesthesia where sympathectomy, for other reasons, is not feasible. Alcohol block, in selected cases, is a useful procedure.

PREPHTHISICAL TUBERCULOSIS

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The term "prephthisical tuberculosis" is applied here to all tuberculous lesions in the chest which precede the development of chronic pulmonary tuberculosis; i. e., phthisis.

General practitioners throughout the country are now facing a new tuberculosis problem; namely, that of the "prephthisical" lesion. Bearers of such lesions have been discovered in vast numbers by x-ray surveys conducted at selective boards, preemployment examinations in many industrial plants, and so on. Most of these newly discovered so-called cases of tuberculosis will have to remain under the care of local general practitioners, who must familiarize themselves with this puzzling phase in the evolution of pulmonary tuberculosis.

The high incidence of pulmonary lesions among apparently healthy persons has been revealed only in comparatively recent years since the x-ray survey has been introduced as a case finding method on a large scale. The role of "prephthisical" lesions in the evolution of pulmonary tuberculosis is still under study. Future large scale observations yielding information on their origin, morphologic nature and long range clinical course should lay the foundation for the knowledge needed to piece together the origin of chronic pulmonary tuberculosis.

Since a very large number of these cases just recently discovered are now under observation, the requisite data should be forthcoming within a reasonable time. As most of these are under the observation of general practitioners, it is most important to obtain their cooperation in this clinical study on a truly nation-wide scale.

It is our purpose in this presentation to make the general practitioner aware of and stimulate his interest in the problem of the "prephthisical" lesion.

CRITERIA FOR RECOGNITION

The essential criteria for its recognition may be summed up as follows:

1. Recently acquired tuberculin sensitiveness which may or may not be followed by x-ray evidence of the infection passing through the lungs. Increased x-ray "reticulation" is often seen scattered over large sections of both lung fields or restricted to one area usually in the upper lung fields ("Dunham's fan").

2. Recently passed simple pleurisy with effusion which has left no localized lesion in the lungs following its resolution.

3. A persistent but stable x-ray lesion in the form of a sizable homogeneous infiltration (round focus) or a cluster of smaller interconnected foci ("smudge focus").

The person having any one or all three of these lesions continues to remain in good health over a protracted period of observation.

NEED FOR A NEW CLASSIFICATION

By the terms of the definition, prephthisical tuberculosis includes lesions which are currently described under a great variety of names, such as primary tuber-

culosis, first infection type tuberculosis, childhood type tuberculosis, early infiltration, minimal tuberculosis and postprimary foci.

The confusion of terms is already a clear indication of the need for a new and simple classification. Recently accumulated clinical experience has completely invalidated the principles of the older classification.

The terms "primary or first infection type" as against "reinfection type" tuberculosis have by now lost their meaning entirely. The fact is that under present epidemiologic conditions we do not know how many infections it takes to produce the classic primary complex (of Parrot, Kuss, Ghon, Ranke). Nor do we know how the progressive process of chronic pulmonary tuberculosis is produced.

CHANGING EVOLUTION

In several recent publications we have discussed the causes of the changing evolution of pulmonary tuberculosis in the present epidemiologic phase. For the detailed discussion of our concepts we must refer here to our previous publications.[1] At this point we wish to reemphasize the following facts:

Tuberculosis is a process the evolution and pathogenesis of which differ with the character of the infection, which in turn changes with the epidemiologic conditions.

Whether the onset of pulmonary tuberculosis should be dated from the time a healthy person has first begun to react to tuberculin, or from the time a lesion has first become demonstrable by x-ray examination in his lungs or from the time of first demonstrable bronchogenic extension, will depend on age and place. This refers to the age of the person and the epidemiologic environment from which he comes and in which he is living. In persons reared and living in a highly tuberculized environment a positive tuberculin reaction is only to be expected. Here x-ray lesions are more often only potential and by no means definitely established phthisis. The vast majority of of such lesions found in persons in such an environment are definitely known to undergo more or less complete resolution and ultimate healing without ever producing clinical disease.

In persons coming from a highly deturberculized environment a positive tuberculin reaction may at times mark already the onset of disease. More often, however, there is a latency period of variable length during which presence or absence of a demonstrable lesion in the lungs is no criterion for the time of onset of phthisis. On one extreme there will be cases with such acute clinical onset that even the first positive roentgenogram shows already too extensive involvement. On the other extreme there will be cases in which the lesion first becoming demonstrable in the lungs remains for many months or years unchanged until finally its breakdown gives rise to progressive phthisis very abruptly.

The only fact beyond dispute which is most important from the standpoint of practical classification is this: Of the recognizable tuberculous lesions in the chest as just enumerated under three headings but few will progress to chronic pulmonary tuberculosis. The majority remain stationary in the prephthisical status for a shorter or longer period; then they become either resolved or obsolete by healing with fibrosis or calcification or both.

1. Mayer, E., and Rappaport, I.: Present Key Problems in Tuberculosis, J. A. M. A. **118**: 1179 (April 4) 1942. Mayer, E.: New Aspects of Tuberculosis, New York State J. Med. **42**: 1723 (Sept. 15) 1942; The Early Infiltrative Tuberculous Lesion, Rocky Mountain M. J. **39**: 278 (April) 1942.

PHTHISICAL AND PREPHTHISICAL LESIONS

This affords us the simple principle of classification into phthisical and prephthisical lesions. The merit of this classification will best be determined by an analysis of its cons and pros.

What are the cons?

1. All phthisical processes (chronic pulmonary tuberculosis) develop from prephthisical lesions which may or may not be recognizable in their prephthisical stage.

2. The incipience of chronic pulmonary tuberculosis and its transition to bronchogenic progression can in many instances be traced to a prephthisical focus previously recognized.

3. There are no definite morphologic (x-ray) qualities of the lesion or clearcut clinical criteria which permit distinction between the prephthisical and phthisical status.

4. Only clinical observation of actual bronchogenic progression will enable us to determine that the transition from prephthisical to the phthisical status has occurred.

5. We do not know what makes a prephthisical lesion progress to phthisis, but it is a logical assumption that treatment of the prephthisical lesion may prevent development of phthisis.

6. A healing "phthisical lesion" still capable of exacerbation is often indistinguishable from a prephthisical lesion.

What are the pros?

1. The prevailing point of view that every tuberculous lesion is either definitely nonphthisical (presumed to be of first infection origin) or definitely phthisical (presumed to be of reinfection origin) is no longer tenable. The fact is that any tuberculous lesion may develop into a chronic pulmonary tuberculosis. Only observation can determine whether any lesion is still in the prephthisical or already in the phthisical stage.

2. The term "prephthisical lesion" implies a potentiality of chronic pulmonary tuberculosis, which must be assumed for every tuberculous lesion until proved otherwise.

3. The vast majority of tuberculous lesions remain prephthisical in character and become resolved or obsolete healed lesions in that status.

4. To treat all tuberculous lesions as if they were definitely phthisical is wrong in principle and now impracticable for two reasons: (*a*) We would be treating many lesions that would never become phthisical. (*b*) Facilities are not available for taking care of such enormous numbers of people.

5. There is no conclusive evidence that all prephthisical lesions are affected by treatment. The fact is that the majority heal without treatment, and furthermore progression to phthisis was not prevented by rest treatment in many instances.

6. The transition from prephthisical to phthisical status may take many years. It is not reasonable or practical to treat a prephthisical lesion in an otherwise healthy person with long periods of strict bed rest.

7. Prephthisical lesions cannot be considered permanently arrested or healed even after apparent inactivity over a period of one to two years; prolonged observation under guidance is more important here than immediate treatment.

8. Young persons with recently acquired "prephthisical lesions" should not be exposed to contact with open phthisis in tuberculosis wards and should not be registered as having chronic pulmonary tuberculosis until observation and study have proved the diagnosis and the contagiousness of their disease by positive sputum findings (or positive gastric contents).

COMMENT

The natural history of tuberculous lesions in the present epidemiologic phase is bound to be revealed to us by the vast amount of and long range of information now being accumulated.

Until adequate knowledge becomes available, we should refrain from old classifications and terms. We should consider only the most important aspect, namely whether or not the lesion is already in the phthisical status, i. e. chronic pulmonary tuberculosis. We should restrict ourselves to the simplest classifying principle, describing them as either prephthisical or phthisical lesions. In doing so we should always bear in mind that the difficulty of separating these from each other operates both ways. However, as there are many more lesions prephthisical than phthisical, in our anxiety not to miss the latter we are bound to overlook many of the former.

Immediate treatment is most important in phthisical lesions. Prolonged observation with frequent x-raying is most important in prephthisical lesions.

Until adequate knowledge is available to permit us to distinguish the phthisical from the prephthisical lesions, we must strike a compromise between overtreatment of the latter and inadequate treatment of the former.

Only most careful study of all individual features will enable us to do this and decide whether the need is greater for immediate treatment or for prolonged observation. A combination of the two will have to be employed often enough until we know more about the potentiality of the tuberculous lesions. Until such time the welfare of the patient must of course be our chief consideration. However, we must not lose sight of the fact that this includes both his psychic and his somatic state.

The question is now often raised whether overtreatment (by strict bed rest) of otherwise healthy bearers of "prephthisical lesions" may not be physically harmful. There is little doubt that it is often harmful to the psychic state. In the present era of increasing awareness of psychosomatic medicine, greater individual consideration must be given to this effect of our treatment.

470 Park Avenue.

Rest Necessary for Repair.—Repair is but the repetition of growth. The same elements, the same kindred conditions, are necessary to the same results. Rest is the necessary antecedent to the healthy accomplishment of both repair and growth. This surely is the natural suggestion of a means toward an end which should never be lost sight of by the physician or surgeon. For example, children who are ill and lose their rest waste very rapidly, more rapidly in proportion than older people; but as soon as the morbid condition subsides, and rest asserts its power, the recovery or repair becomes extremely active, accompanied by an increased tendency to sleep; sleep supplying the great desideratum previously required.—Hilton, John: Rest and Pain, London, George Bell & Sons, 1857.

THE TREATMENT OF SKELETAL METASTASES SECONDARY TO CARCINOMA OF THE PROSTATE

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Low back pain, with or without sciatic radiation, constitutes a fairly large part of the practice of an orthopedic surgeon. The current wave of becoming "disk conscious," either hidden or otherwise, tends to obscure the fact that there are many other lesions which are equally important in the causation of the low back syndrome. The discussion here concerns the problem of metastases to the skeletal system secondary to carcinoma of the prostate. Hugh Young states that "roughly and for practical purposes 20 per cent of the men over 60 years old will have symptoms due to prostatic trouble and of these 20 per cent will have cancer." [1] Huggins [2] states that "cancer of the prostate is the cause of death in 5 per cent of the men over 50."

There are then the small but definite group of patients over 50 with complaints of sciatica, low back pain and other bone pain which may be secondary to the metastases from carcinoma of the prostate. Of the presenting symptoms in these patients, 36 per cent were found to complain of sciatica, 40 per cent of lumbar back pain, 14 per cent of other bone pain.[2] Generally there is the accompanying symptom of obstruction at the bladder neck or of nocturia or frequency. However, in some instances low back pain with or without the sciatic syndrome may be the first symptom which causes these patients to present themselves to a physician.

The metastases from this type of carcinoma are predominantly to the pelvis, sacrum and lumbar spine. Graves and Militzer [3] in 81 autopsies of men dying of carcinoma of the prostate found that 85 per cent of those with metastases showed involvement of the pelvis and sacrum, while 59 per cent showed metastases to the lumbar spine. These metastases may be either osteoblastic or osteoclastic, the former being by far more common. Pathologic fractures are found in only about 5 per cent of these cases. Pain, therefore, rather than pathologic fractures brings these patients to the attention of the orthopedic surgeon.

As some of these men do not have symptoms referable to the genitourinary system, it is imperative that the rectal examination be included for any man presenting himself with low back pain. This is especially true for men over 50. The most important single sign in the diagnosis of carcinoma of the prostate is the palpation of that gland by rectum. This examination alone in the hands of the experienced will, according to Carroll and Scardino,[1] provide a correct diagnosis in 95 per cent of the cases. Palpation of a stony hard, irregular gland is enough to arouse active suspicion, and other methods of diagnosis such as cystoscopy and biopsy should be done by the genitourinary surgeon.

Read before the Section on Orthopedic Surgery at the Ninety-Fourth Annual Session of the American Medical Association, Chicago, June 14, 1944.

1. Carroll, G., and Scardino L.: Carcinoma of Prostate Gland Treated by Castration, Mississippi Valley M. J. **65**: 1 (Jan.) 1943.
2. Huggins, C.: The Diagnosis of Carcinoma of the Prostate, Including the Interpretation of Serum Phosphatase Values, Bull. New York Acad. Med. **19**: 195 (March) 1943.
3. Graves, R. C., and Militzer, R. E.: Carcinoma of the Prostate with Metastases, J. Urol. **33**: 235 (March) 1935.

X-ray examination of the lumbar spine and pelvis is, of course, of primary importance in making the diagnosis.

Formerly, treatment of metastases secondary to carcinoma of the prostate was mainly palliative. High voltage x-rays provided the most effective agent to relieve the pain due to metastases, and about 50 per cent of these patients received some relief.[4] The extent and duration of this relief were problematic. Braces were sometimes used to decrease that portion of the pain which occurred with motion and to aid in preventing that small percentage of cases which went on to pathologic fractures. Morphine in increasing doses has been necessary, and section of nerve roots and pain pathways to the spinal cord or intraspinal injection of absolute alcohol has given definite relief of pain. These procedures, however, were merely for the relief of pain and were done late in the disease.

Within the last few years a new concept of prostatic carcinoma has been provided. It has been shown that the enzyme acid phosphatase is present in prostatic tissue, being present in small amounts in infancy and childhood and increasing during puberty to the high values found in adults.[5] The serum acid phosphatase level is found to be normal in that carcinoma of the prostate which is still confined within the capsule, while it is increased in local and more definitely in skeletal metastases from this neoplasm. This has been shown by Robinson and the Gutmans,[6] who believe that an upward trend to the acid phosphatase curve may be an indication of further metastatic involvement. It has further been shown that the androgen increases serum acid phosphatase, while the estrogen decreases its level.[7] Hence surgical castrations, estrogenic injections or radiation to the testes would seem to be practical methods of diminishing androgen formation and hence would decrease the serum acid phosphatase level. Huggins[2] states that "acid phosphatase levels of the serum are significantly elevated only in carcinoma of the prostate and in this condition only when metastases have occurred." Reporting 100 cases of advanced carcinoma and studying these by means of acid and alkaline phosphatase levels, he believes that any man with a serum acid phosphatase over 10 King-Armstrong units per hundred cubic centimeters of serum is certain to have a carcinoma of the prostate with metastases. The normal levels using the King-Armstrong units are 4.5 for the acid and 12.5 for the alkaline phosphatase.

In previous papers Huggins and his associates[8] have shown that surgical orchiectomy provided considerable improvement in approximately 80 per cent of the patients having carcinoma of the prostate with osseous metastases. This improvement was manifest (1) by decreased serum acid phosphatase levels, (2) a decrease in the symptoms, (3) a decrease in the size of the primary lesion, (4) increased density of the metastatic lesion and (5) improvement of the neurologic signs which may accompany metastases to the lumbar spine.[7] It was their impression that improvement is greater than observed in any case in which far advanced or metastatic lesions are treated by any other method.

Nesbit and Cummings,[9] in a series of 75 cases of carcinoma of the prostate treated by orchiectomy, observed similar results in 73 per cent of their cases. Alyea and Henderson[10] report 40 similarly treated cases with similarly encouraging results. Herbst,[11] using the estrogen estradiol dipropionate and diethylstilbestrol was able to accomplish somewhat similar results. Dean and his associates,[12] using diethylstilbestrol orally in a small series, found that the general improvement was as great as that following orchiectomy, although possibly the changes were slower. He also found that this therapy provided some beneficial effects in cases following surgical castration followed by relapse but that the improvement appeared less than in those treated primarily with the drug. In their studies they used the Bodansky unit, in which 0.7 unit was considered normal and any value over 1.0 was considered pathognomonic of metastases from carcinoma of the prostate. The normal alkaline phosphatase, using this method, is 1.5 to 5.0.

None of these investigators have proposed that this is a cure but that patients have been decidedly improved with actual regression of local and metastastic lesions for a period of years. Of special interest is the alleviation of neurologic symptoms. Clarke and Viets[13] report a case in which there were carcinoma with metastases and a complete block of cerebrospinal fluid. The protein was 789 mg. After the use of diethylstilbestrol the block was relieved and the spinal fluid protein dropped to 52. Huggins and his associates[7] report a similar case treated by orchiectomy. Nesbit and Cummings[9] report 2 cases of transverse myelitis with complete relief of pain and return of function following orchiectomy.

I found repeated mention in the literature of the fact that treatment may be carried out by surgical castration, by the use of estrogens or by irradiation of the testes.[14] In reviewing the literature one can find much to substantiate the claims for orchiectomy or the use of estrogens. However, one does not find a similar amount of evidence in favor of castration produced by irradiation of the testicles. Munger,[15] in a series of several cases treated by testicular irradiation, states that slightly better results were obtained with resection and irradiation of the testes than in those cases treated by resection and x-ray therapy exclusive of irradiation to the testes. As androgen formation is accomplished in the interstitial cells, which are relatively radioresistant, it would seem that this would be a poor method of choice. There are those who believe that removal of the testes by castration fails to remove all of the androgenic activity from the body, as the adrenal cortex performs an androgenic function. Whether or not this is of sufficient import to say that treatment by estrogens is superior to treatment by surgical castration has not been completely settled.

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5. Gutman, A. B., and Gutman, E. B.: Acid Phosphatase and Functional Activity of the Prostate (Man) and Preputial Glands (Rat), Proc. Soc. Exper. Biol. & Med. **39:** 529 (Dec.) 1938.
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9. Nesbit, R. M., and Cummings, R. H.: Prostate Carcinoma Treated by Orchiectomy, J. A. M. A. **120:** 1109 (Dec. 5) 1942.
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11. Herbst, W. P.: Biochemical Therapeusis in Carcinoma of the Prostate Gland, J. A. M. A. **120:** 1116 (Dec. 5) 1942.
12. Dean, A. L.; Woodard, H. Q., and Twombly, G. H.: The Endocrine Treatment of Cancers of the Prostate, J. Urol. **49:** 108 (Jan.) 1943.
13. Clarke, B. G., and Viets, H. R.: Effect of Diethylstilbestrol on Neurologic Symptoms of Carcinoma of the Prostate, J. A. M. A. **121:** 499 (Feb. 13) 1943.
14. Low, H. T., and Oakley, H. E.: Androgen Inhibition in the Treatment of Carcinoma of the Prostate, Rocky Mountain M. J. **39:** 687 (Oct.) 1942.
15. Munger, A. D.: Experiences in Treatment of Carcinoma of the Prostate with Irradiation of the Testicles, J. Urol. **46:** 1007 (Nov.) 1941.

REPORT OF CASES

CASE 1.—W. H. H., a man aged 57, seen May 18, 1943 with a complaint of pain in the hip since December 1942, had stepped from a ladder, missing the last tread and suffering acute pain in the right hip. This pain had been getting gradually worse and he had lost 10 to 15 pounds (4.5 to 6.8 Kg.) in weight. Examination showed pronounced muscle spasm in the lumbar region with a scoliosis to the right. Straight leg raising on the right side was impossible with the knee extended. Abduction of the hip was decidedly limited because of pain. The genitourinary history was entirely negative except for occasional nocturia. The patient was admitted to the orthopedic service of the University Hospital, where examination showed hemoglobin 73 per cent, white blood cells 9,100, the urine analysis entirely negative, the sedimentation rate slightly increased, alkaline phosphatase 6.2 units and acid phosphatase 0.5 unit. Rectal examination showed an asymmetrical, irregular, nodular, stony hard and enlarged prostate, changes on the right side being more apparent than those on the left. X-ray examination showed an extensive destructive type of lesion in the horizontal ramus and pubis on the right side.

A bilateral orchiectomy was done June 1. The course postoperatively was uneventful, with a gradual but complete relief of pain. The patient was able to resume his duties as a school teacher and, in the words of the patient, "I'd never even know anything had been the matter with me."

Checkup films August 20 showed considerable replacement of bone at the site of the lesion.

X-ray films in January 1944 showed almost complete healing in of the bony defect.

CASE 2.—J. B. K., a man aged 70, was admitted to University Hospital April 21, 1942 complaining of very severe pain in the lumbar spine and hip. Further history disclosed a history of nocturia, frequency and burning of many years' duration. Two years previously he had had a transurethral resection plus x-ray treatment to the prostate.

Examination showed a very large, stony hard, fixed prostate. Hemoglobin was 83 per cent and white blood cells numbered 9,000. Urine analysis showed 4 to 6 white cells per high power field and the urine was grossly blood tinged. Blood urea nitrogen was 11, alkaline phosphatase 6.6 and acid phosphatase 2.4. X-ray films showed pronounced osteoblastic involvement of the lumbar spine and pelvis. On April 23 a bilateral orchiectomy was performed, followed by much improvement, the pain being completely relieved. The patient was seen again on October 19, when he was completely asymptomatic except for nocturia two to three times. Hemoglobin was 88 per cent, white blood cells numbered 6,600, alkaline phosphatase was 7.6 units and acid phosphatase was 0.5 unit. X-ray examination revealed "considerable improvement in the appearance of the lumbar spine and pelvis since the examination in April 1942. The present texture of the bone of the involved vertebrae is more normal than it was and much of the density in the sacral portion of the pelvis has completely disappeared. As a matter of fact, if one only had the present films it would be difficult to make a diagnosis of metastatic carcinoma from them."

The patient has continued well up to the present time.

SUMMARY

There are in the literature about 300 cases of carcinoma of the prostate treated by orchiectomy or administration of estrogen. In about 75 per cent of the cases relief of pain has followed, sometimes as soon as twenty-four to forty-eight hours. There is a gross parallelism in the drop of the serum acid phosphatase level and the clinical improvement. An increase in this level means metastases. Carcinoma of the prostate with metastases is the only condition which will exhibit a high serum acid phosphatase level.

As a large part of our practice concerns pain in the low part of the back and as such a large number of these tumors metastasize to this area, we must constantly be on the alert for this condition. Any man over 50 presenting himself with low back pain should have a rectal examination as well as the routine orthopedic examination. X-ray films of the spine and pelvis plus alkaline and acid phosphatase determinations will aid in the diagnosis in suspected cases.

Orchiectomy or treatment with estrogens has not been promoted as a cure but as a physiologic method for the relief of pain, and this benefit may last one or more years.

ABSTRACT OF DISCUSSION

DR. J. ALBERT KEY, St. Louis: Pain in the back from intervertebral disks usually occurs in young persons and rarely in those over 50. One of the last things one has to look for in a patient who complains of pain in the back is a prostatic carcinoma. We should not include a routine rectal examination of all patients with pain in the back. There are three reasons for this: 1. Most of our rectal examinations would be of little value because orthopedic surgeons do not know much about the prostate, and we would miss the early cases which are the important ones. 2. It is unusual that patients with skeletal metastases sufficient to cause pain do not have some urinary symptoms if their metastases are due to a carcinoma of the prostate. 3. The third reason is the age factor. The high percentage of low back pains with sciatica is due to the intervertebral disk. All of us should, before we get very far in the treatment of low back pain, have an x-ray examination made, and if there are sufficient skeletal metastases to cause pain I think that they will usually be revealed. As to the treatment with diethylstilbestrol, there is no question that it is a wonderful advance and relief to these patients. An orchiectomy is said to be better. Unfortunately it does not relieve the patient permanently.

DR. ELMER HESS, Erie, Pa.: I would like to take issue with the last speaker in that I think it is the function of every doctor to make a rectal examination and to know what he is feeling. The most severe subjective symptom in these cases is pain. Do not think you have to have urinary symptoms to have prostatic cancer with metastasis; you do not. I have seen 1 case of pathologic fracture of the spine and 2 cases of fracture of the neck of the femur without a single urinary symptom. Frequently an x-ray diagnosis of metastasis to bone will cause the search for a small, unobstructed prostatic nodule, which may or may not be found until autopsy. In most of these cases there are definitely palpable nodules in the prostate. Once you feel a prostatic carcinoma you will never mistake it. The vast majority can be diagnosed by rectal palpation. I have seen pain relieved within six hours. Within a short time the appetite increases, the patients gain in weight and the gland definitely regresses while the bony metastases calcify. Prior to the work of Huggins, Bumpus reported 2,000 cases from the Mayo Clinic, with metastasis, all fatal within nine months. Now many patients live three years or longer in comfort. Isn't this worth while? An adjunct to castration is the administration of diethylstilbestrol. The doses must be large, as much as 5 mg. per day for forty or fifty days, hypodermically or by mouth. If the testicle is atrophied we expect a poor result. Return of symptoms is a fresh indication for the continued use of diethylstilbestrol. I prefer surgical to x-ray castration. An orthopedic surgeon should know something about carcinoma of the prostate, and it is likewise beneficial for a urologist to know something about some of your problems. It is by the interchange of thought between us that we progress.

DR. ROY I. PECK, Philadelphia: Dr. Hess has answered both of Dr. Key's questions for me, and I think it is unnecessary to enlarge on them further. The reason for bringing this problem before this group is that we have been seeing more and more of these patients who are referred to us by general practitioners and medical men for pain in the joints and back. As the consultant, it behooves us to make the diagnosis.

RECOGNITION AND MANAGEMENT OF THE WOMAN PREDISPOSED TO UTERINE ADENOCARCINOMA

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Evidence is accumulating to suggest that periodic physical examinations often enable the physician to find malignant disease at an early curable stage. At least this relatively simple expedient suffices when carcinoma begins on a surface that can be visualized or palpated by the examining finger. On the other hand, cancer developing at a hidden, inaccessible site offers little opportunity for an early diagnosis. Here the utilization of various diagnostic aids provides the clinician with means of detecting an early growth. However, it is usually regarded as unpractical to employ such procedures as gastroscopy or the taking of an encephalogram in the same routine manner as one might advocate an annual physical examination. The incidence of malignant disease at any given site is usually so low as to yield disarmingly negative results when patients are subjected to purely routine gastrointestinal x-ray examinations, cystoscopy or uterine curettage. Yet if we wait until the individual complains of symptoms definitely suggesting neoplasm at a hidden site, if cancer is present, the chances of finding an early curable lesion are greatly reduced. Though not practical, it nevertheless appears desirable to continue to urge routine employment of methods capable of detecting early malignant growths before symptoms justify more than a suspicion of a new growth.

In our efforts to control cancer, we should seek means of reducing rather than of increasing the number of expensive and wearisome diagnostic methods to be employetl. If we could safely omit such procedures as uterine curettage for patients showing none of the factors predisposing them to the development of a type of malignancy suspected, a desirable saving of patients' funds and professional facilities would be effected. Recognition of certain lesions as precancerous or recognition of the fact that a person shows a predisposition to a certain type of malignancy appear to be long steps in the desired direction. Given a predisposed group, the employment of measures adequate to establish a diagnosis should yield results that would appear worth while to patients and physicians alike.

The foregoing generalizations suggest the desirability of attempts to recognize the woman predisposed to the development of cancer in the uterine fundus. Perhaps not infrequently we now hesitate to recommend a diagnostic curettage because the possibility of malignancy is slight. Too often we tend to regard curettement as a procedure necessary to eliminate the possible presence of carcinoma. If it appears possible to recognize women predisposed to the development of adenocarcinoma of the uterus in selected cases, we should without hesitation urge employment of curettage, since within a predisposed group it would more frequently provide the means of discovering early cancer in a curable stage.

Several years ago I became interested in the significance of menorrhagia among women over 40 years of age. Since that time with every suitable patient contacted in an office practice, record has been made of the woman's menstrual behavior during the climacteric and after the menopause. To insure uniformity of interpretation, all histories considered were taken by one person. The figures thus compiled have provided the data utilized in this report.

FACTORS PREDISPOSING TO UTERINE CARCINOMA

Age at Menopause.—A number of writers have considered the possibility that a late menopause favors the development of endometrial carcinoma. It has seemed probable that if persisting estrogen stimulation predisposes the woman's uterus to the development of endometrial carcinoma a higher incidence should be found among those women whose menstrual cycle continues past their fiftieth year. Crossen and Hobbs [1] were among the first to suggest this relationship, but Masson,[2] Taylor [3] and others have failed to note a higher incidence of carcinoma among women whose menstruation continued beyond the average age.

TABLE 1.—*Age at Menopause*

113 Women Examined 16+ Years After Spontaneous Cessation of Periods (No Postmenstrual Bleeding)			Age at Menopause	113 Women with Adenocarcinoma to Account for Postmenopausal Bleeding (Occurring Within 15 Years After Spontaneous Menopause)		
Incidence	Number			Number		Incidence
17.7%	20	4 1 4 .. 11	35 40	4 .. 3 1 1	9	8.0%
35.4%	40	7 6 6 8 13	 45	2 2 3 3 9	19	16.5%
38.9%	44	6 11 4 5 13	 50	10 10 4 5 16	45	39.9%
7.1%	8	3 4 .. 1 ..	 55	6 6 10 7 5	34	30.2%
0.9%	1	.. 1 ..	 58	4 1 1	6	5.4%
100%	113	113	Totals	113	113	100%

In an attempt to evaluate this factor, since it was noted that 75 per cent of women with adenocarcinoma of the uterus developed the growth within fifteen years after cessation of their periods, for controls in table 1 I have considered only women who failed to develop carcinoma within sixteen or more years after their menopause. It will be noted in the data shown that only 8 per cent of the women who did not develop uterine cancer continued to menstruate past their fiftieth year. In comparison it seems significant that over 35 per cent of the women treated for adenocarcinoma of

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Dr. James E. King gave permission to use office records as the basis for this report. Statistical analysis was supplied by Drs. Louis C. Kress and Morton L. Levin of the Division of Cancer Control, Department of Health of the State of New York.

1. Crossen, R. J., and Hobbs, J. E.: J. Missouri M. A. **32**: 361, 1935.
2. Masson, J. C.: Surg., Gynec. & Obst. **70**: 1083, 1940.
3. Taylor, H. C., Jr.: Am. J. Obst. & Gynec. **33**: 309, 1932. Taylor, H. C., Jr., and Millen, R.: Am. J. Obst. & Gynec. **36**: 22, 1938.

the uterus gave a history of periods continuing until the age of 51 or more years. Considering this small number of patients a group selected to permit evaluation of the age at menopause factor, one would agree with Crossen and Hobbs that this type of uterine cancer develops more frequently among women whose periods continue past their fiftieth year. Certainly among the women observed a late menopause appears not infrequently among women who eventually develop adenocarcinoma of the uterus.

Body Type.—Medical literature ascribes little importance to attempts to recognize types of individuals predisposed to a specific disease. Corscaden [4] noted in 1937 that adenocarcinoma of the uterus occurred more frequently among women with wide hips and short fingers, and Scheffey [5] was impressed by the frequency of carcinoma of the fundus among the diabetic. More recently, reporting a correlation of skeletal development and causes of death, Draper, Dupertius and Caughey [6] may prove to have awakened the professional interests along this line.

Preexisting Uterine Pathologic Conditions.—The possibility that preexisting nonmalignant pathologic changes in the uterus may predispose the individual to adenocarcinoma has been given adequate consideration in the past. Adenomyosis, polyps and fibromyomas are often known to have been present prior to the development of cancer in the uterus. Malignant changes are occasionally noted in polyps, but this association is unusual and there is no evidence that adenocarcinoma is frequently preceded by malignant changes in a preexisting polyp. Similarly there is no recognized tendency of adenomyosis or endometriosis to predispose the individual to the development of adenocarcinoma. Every discussion of the carcinoma of the fundus takes note of the frequency with which this type of malignant growth is found in uteri containing fibroids. At the present time it would appear to be the consensus that adenocarcinoma develops as frequently in fibroid as in nonfibroid uteri but that the presence of myomas in the uterus does not predispose the individual to the development of fundal carcinoma. I found this point of view to be sustained by the data to be shown in table 3.

Persisting Estrogen Stimulation.—No histologic evidence of perverted ovarian or uterine physiology has been recognized as preceding the development of adenocarcinoma constantly enough to warrant acceptance of a single endometrial state as a premalignant lesion. However, this statement cannot be made without reference to the thought provoking considerations given by earlier writers to the question of premalignant lesions of the endometrium. In 1932 Taylor [3] suggested that it seemed difficult to imagine any but a hyperplastic state of the endometrium preceding the development of endometrial carcinoma. Novak [7] has frequently referred to the possibility that hyperplasia during the climacteric or after the menopause might be a hyperplastic process preceding malignant changes in the endometrium. Many clinicians have been impressed by cases similar to the one reported by Mazzola [8] in which adenocarcinoma of the fundus developed at the age of 31 after hyperplasia had been repeatedly found in the uterus when menorrhagia necessitated curettage at intervals after 18 years of age. It has often seemed so logical to assume that hyperplasia precedes carcinoma that the concept may have acquired greater significance than the facts justify. Jones and Brewer [9] found in their material that hyperplasia and anovulatory cycles apparently did not commonly precede the recognition of adenocarcinoma among women whose cancer developed before the menopause. It seems evident that adenocarcinoma can develop when the follicular activity has been modified by the development of a corpus luteum as well as when the endometrium has been subjected to long continued estrogen stimulation.

Estrogenic Therapy of the Menopause.—One hesitates to discuss evidence suggesting that persisting estrogen stimulation may predispose women to carcinoma of the fundus because of the widespread administration of so-called replacement therapy in order to relieve postmenopausal symptoms. Giest [10] and others have expressed doubts that the amounts of hormone necessary to relieve hot flushes could act as a carcinogenic factor on the endometrium, breast or vaginal membrane of the human adult. However, until more evidence on this question becomes available the tendency to permit patients to take estrogens over a long period of time is to be condemned if for no other reason than the fact that it may be providing the first step in the biologic process necessary for the development of endometrial carcinoma. A more practical and timely objection to the widespread use of estrogenic therapy is the fact that all too frequently the long continued use of estrogens results in uterine bleeding indicating curettage to eliminate the possibility of cancer in the fundus. Novak [7] has recently warned against the indiscriminate use of estrogens sufficiently potent to cause endometrial proliferation and bleeding. The occurrence of therapy induced postmenopausal bleeding is fraught with danger if the physician is willing to assume that the bleeding is due to the estrogens employed, thereby possibly neglecting institution of measures adequate to diagnose an early curable carcinoma (i. e. curettage).

Irregular or Increased Bleeding.—A practicable basis for recognizing women predisposed to corpus carcinoma is suggested by the invariably first symptom of uterine cancer. In every study of cervical or fundal carcinoma, irregular bleeding is reported to have been the earliest symptom in 95 per cent of patients. However, since it is too well known that such bleeding does not always mean a malignant growth, facts concerning abnormal bleeding must repeatedly be reviewed. Two figures should be remembered whenever the significance of irregular bleeding is discussed. First, how often does such bleeding occur among apparently normal women and, second, how often is it due to early curable cancer in the uterus? The answer to either question should not be given until it is known whether bleeding is occurring during the climacteric or recurring after the menopause.

4. Corscaden, J. C.: Am. J. Obst. & Gynec. **38**: 11, 1939.
5. Scheffey, L. C., and Thudium, W. J.: Am. J. Obst. & Gynec. **34**: 1006, 1937; **46**: 786, 1943.
6. Draper, G.; Dupertius, C. W., and Caughey, J. L.: Human Constitution in Clinical Medicine, New York, Paul B. Hoeber, Inc., 1943.
7. Novak, E.: Am. J. Obst. & Gynec. **32**: 674, 1936; Menopause and Its Management, J. A. M. A. **110**: 619 (Feb. 26) 1938; Postmenopausal Bleeding as a Hazard of Diethylstilbestrol Therapy, J. A. M. A. **125**: 98 (May 13) 1944. Novak, E., and Richardson, E. H., Jr.: Am. J. Obst. & Gynec. **42**: 564, 1941.
8. Mazzola, V. P.: Am. J. Obst. & Gynec. **36**: 698, 1938.
9. Jones, H. O., and Brewer, J. I.: Am. J. Obst. & Gynec. **42**: 207, 1941.
10. Giest, S.: Paper read before the Lake Keuka Medicine and Surgical Association, 1940.

Preclimacteric Bleeding.—The frequency of increased or irregularly frequent bleeding before the menopause has been calculated in table 2. Among 614 women questioned a year or more after spontaneous cessation of their periods there were 428 with no complaints referable to bleeding. In most instances these women

TABLE 2.—*Incidence of Menorrhagia at Climacteric*

Total number of women questioned one or more years after spontaneous cessation of their periods, regarding the occurrence of increased bleeding during their climacteric	614
Number reporting menorrhagia preceding spontaneous cessation of their periods = 120, or 19.5%	
Number questioned a year or more after spontaneous cessation of their periods, complaining of postmenopausal bleeding	186
Number questioned a year or more after spontaneous cessation of their periods, with no postmenopausal complaint referrable to bleeding	428
Number of this 428 reporting menorrhagia preceding spontaneous cessation of their periods = 57, or 13.3%	

sought advice because of a prolapse, pruritus or breast lesion. Among women over 40 consulting a gynecologist, one might expect to find a higher incidence of menorrhagia than occurs among the population at large. However, by eliminating those patients with any complaint referable to bleeding we should certainly have obtained not too high a figure as to the incidence of preclimacteric bleeding. The incidence calculated in table 2, i. e. 13 women among each hundred, has been previously published [11] and is again suggested as the frequency of increased flowing among women during the so-called change of life.

The causes of preclimacteric bleeding have been frequently reported and for the purposes of this report need no consideration except as regards the frequency with which uterine cancer was found to be the cause for menorrhagia before the menopause. Since fibroids of the uterus, the most frequent cause of preclimacteric bleeding, are usually noted on examination, it has seemed practical to divide such bleeding cases into two groups: those with appreciable fibroids and those without a grossly enlarged uterus. The reported incidence of coexisting adenocarcinoma and fibromyoma is made up largely of women with fibroids who experience postmenopausal bleeding and on curettage were found to have an adenocarcinoma. Relatively few patients develop

TABLE 3.—*Incidence of Adenocarcinoma of the Uterus as Cause for Increased Bleeding at Climacteric*

Total number of women, over 40 years of age, complaining of increased or irregular bleeding before menopause	729
Grossly appreciable fibroids in 371, or 50.9%	
Incidence of adenocarcinoma found during climacteric bleeding among women with fibroids	2.12%
Incidence of adenocarcinoma found during climacteric bleeding among women with no fibroids palpable	2.43%

carcinoma during the period when preclimacteric bleeding is occurring. A number of writers have emphasized that carcinoma cannot be excluded as the cause of bleeding simply because a patient has a fibromyomatous uterus. It should be emphasized that this rule applies both before and after the menopause. The danger inherent in preclimacteric bleeding is apparent from a glance at tables 3 and 4. While menorrhagia was due to cancer in only 2.3 per cent of cases before the menopause, when fibroids, polyps and erosion were excluded and women with a grossly normal uterus were curetted in order to establish a diagnosis the incidence of adenocarcinoma was 9.1 per cent.

Postmenopausal Bleeding.—Many writers have emphasized the frequency with which uterine cancer accounts for the occurrence of postmenopausal bleeding. I believe it is now common practice to accept no other diagnosis as the cause of such bleeding until curettage has eliminated the possibility of adenocarcinoma in the fundus. It is not within the province of this report to consider the causes or management of postmenopausal bleeding. However, as shown in table 5, I have been particularly interested to find that among 186 women experiencing a recurrence of uterine bleeding one or more years after cessation of their periods the incidence of menorrhagia during the climacteric was 33.9 per cent. This figure, as previously reported,[11] suggests that the woman who apparently spontaneously recovers after menorrhagia at the menopause has two and a half times greater chance of developing postmenopausal bleeding than the woman who experienced only a normally gradual or abrupt cessation of her periods. The significance of so definite a predisposition to postmenopausal bleeding is evident when one considers the frequency with which uterine carcinoma is found to

TABLE 4.—*Incidence of Adenocarcinoma of the Uterus*

Women over 40 years of age
Complaint: Increased bleeding before menopause
Grossly normal uterus (omitting fibroids, polyps and erosions)
Curetted for diagnosis

Total Cases Considered	Adenocarcinoma Found on Curettage	Incidence
165	15	9.1%

be the cause of postmenopausal bleeding. Among the patients seen in office practice, postmenopausal bleeding may be due to senile vaginitis, vaginal erosion secondary to prolapse, easily removed polyps or the excessive use of estrogenic therapy for menopausal symptoms. Such causes for postmenopausal bleeding do not appear frequently among patients referred to the hospital for care, and their inclusion accounts for the relatively low incidence of cancer noted in this series.

Table 5 illustrates the fact that at the time postmenopausal bleeding occurs a somewhat higher incidence of adenocarcinoma was noted among women who give a history of preclimacteric bleeding than was noted among women who experienced no menorrhagia before their menopause. This observation assumes greater significance when considered together with the predisposition to postmenopausal bleeding of women with a history of a menorrhagia at the menopause.

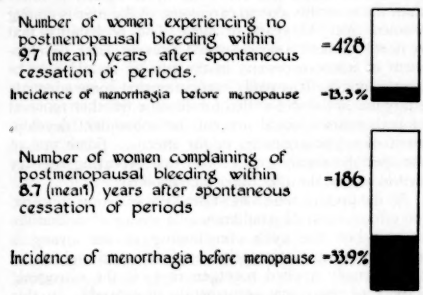
The data suggest, as shown in table 5, that when postmenopausal bleeding occurs the woman who experienced increased bleeding during her climacteric presents three and one-half times greater chance of having developed an adenocarcinoma of the uterus than does the woman who noted no menorrhagia during her change of life.

COMMENT

The Significance of Abnormal Bleeding.—Observation of the foregoing evidence that menorrhagia at the menopause predisposes the individual to adenocarcinoma

11. Randall, C. L.: New York State J. Med. **43**: 1635, 1943.

does not identify the carcinogenic factor involved. Obviously, the mere fact that bleeding occurred or is occurring serves only to direct attention to a group of women among whom one should anticipate a high incidence of adenocarcinoma of the uterus. While no single state or lesion has been recognized as precancerous, the fact the abnormal bleeding occurred suggests the existence of a common factor among the predisposed group. I suspect that the endometrial hyperplasia so frequently associated with menorrhagia at the climacteric may persist asymptomatically in a uterus destined to bleed again with the postmenopausal development of an adenocarcinoma in the fundus.


Number of women experiencing no postmenopausal bleeding within 9.7 (mean) years after spontaneous cessation of periods.
=428
Incidence of menorrhagia before menopause -13.3%
Number of women complaining of postmenopausal bleeding within 8.7 (mean) years after spontaneous cessation of periods
=186
Incidence of menorrhagia before menopause -33.9%

Comparative incidence of increased bleeding during the climacteric.

Regardless of personal conviction or skepticism regarding the precancerous significance of endometrial hyperplasia at the menopause, there seems ample evidence that some degree of ovarian function precedes the development of adenocarcinoma of the uterus. Writers seem agreed on this point by statement or inference without attributing any particular significance to it. However, Herrell [12] has emphasized that he has never found adenocarcinoma of the uterus in a castrated woman. The same observer studied the blood level of estrogens in postmenopausal women with adenocarcinoma of the uterus and reported no significantly high levels. It will be recalled that similar studies of women showing endometrial hyperplasia suggest that long continued estrogen levels rather than a state of hyperestrinism seeks to account for that degree of atypical endometrial proliferation.

TABLE 5.—*Comparative Incidence of Adenocarcinoma Among Women with a Normal and a Menorrhagic Menopause*

Groups	History of No Increased Bleeding Prior to Menopause	History of Menorrhagia Prior to Menopause
Incidence of adenocarcinoma accounting for postmenopausal bleeding	10.5%	14.3%
Probability of postmenopausal bleeding (from the chart)	1	to 2.5
Ultimate chance of developing adenocarcinoma	1	to 3.4

In this connection recognition of adenocarcinoma of the uterus coincident with the discovery of a granulosa cell tumor of the ovary should be mentioned. If estrogenic stimulation or priming of the endometrium is a prerequisite to the development of endometrial carcinoma, it is not surprising that adenocarcinoma has been repeatedly reported to be present in the uterus of postmenopausal women, who in addition to bleeding show breast, vulvar and vaginal evidence of the sexual rejuvenation attributed to the tumor's hormone output. In 2 cases in which I found adenocarcinoma in the uterus accounting for the postmenopausal bleeding whereas the mass palpable proved to be a granulosa cell tumor of the ovary, I was impressed by the rather long time that had elapsed between the onset of bleeding and institution of measures adequate to establish a complete diagnosis (i. e. curettage and laparotomy). In both instances it seemed probable that the uterine bleeding must have originally been due to benign changes in the endometrium on which lesion malignant changes were eventually superimposed.

I have no thought of suggesting that all women who exhibit clinical evidences of continued follicular activity after cessation of their periods are destined to develop adenocarcinoma of the fundus. On the other hand, I do believe that all women who develop carcinoma of the fundus after the menopause will be found among those whose symptoms and tissues suggest continued ovarian activity. With this thought in mind I have reviewed the records of 162 patients with adenocarcinoma of the uterus treated in the Buffalo General Hospital during the years 1930 to 1943 in order to supplement the smaller number of cases whose findings and course suggested the observations forming the basis of this report. Not only would I repeat Herrell's statement (that he never found adenocarcinoma of the uterus in a woman who had lost both ovaries), I have yet to find adenocarcinoma of the uterus in a woman, regardless of her age, whose vulvar and vaginal tissues suggest deprivation of estrogenic hormone. More specifically, I have not found adenocarcinoma in the uterus of a woman who at the same time shows an atrophic or senile vaginitis.

Not infrequently one sees a patient experiencing hot flushes who at the same time is complaining of vaginal bleeding after the menopause. In my experience such patients are invariably found bleeding from a cervical or endometrial polyp or from an eroded cervix or vaginal membrane, or they have hypertension with an atrophic vaginitis and an atrophic endometrium. It has seemed significant that one repeatedly fails to find adenocarcinoma among women who are having hot flushes at the time they experience uterine bleeding. One might even logically assume that as long as a woman is having hot flushes any vaginal bleeding she develops is in all probability not due to carcinoma in the fundus. Such statements are not made with the thought that any such process of reasoning should be employed as a means of eliminating the necessity of a diagnostic curettage. Rather they are made only in an effort to focus attention on an obvious conclusion: The woman noting postmenopausal bleeding who is not experiencing hot flushes and whose vulvar and vaginal membranes show none of the atrophic changes usually attributed to estrogen deprivation is likely to be bleeding from an adenocarcinoma of the endometrium.

Evidences on Examination: Vaginal Smears.—While the establishment of a diagnosis is not within the intended scope of this report, it should be mentioned

12. Herrell, W. E.: Am. J. Obst. & Gynec. **37**: 559, 1939.

that early diagnosis may eventually be facilitated by more widespread employment of vaginal smears. Papanicolaou,[13] Traut[14] and Meigs and his co-workers[15] have presented instructive evaluations of the method. Neustaedter and Mackenzie[16] emphasized that the procedure is reliable as a means of detecting estrogenic activity but is valueless as a means of evaluating the corpus luteum. If it can be shown that postmenopausal women with evidences of persisting estrogenic activity are more likely to develop adenocarcinoma of the fundus, the vaginal smear would seem a most reliable means of detecting the predisposed group. Certainly the detection of microscopic bleeding and the slough of neoplastic cells would permit of the earliest possible diagnosis. However, at the present time most clinicians would agree with Ward,[17] who has recently reemphasized the value of introducing a sound into the uterus as a means of detecting the presence of a friable lesion in the cavity.

MANAGEMENT OF THE PATIENT

The evidence at hand suggests employment of several measures which should reduce the incidence of adenocarcinoma in the fundus. The empirical use of roentgen therapy as a treatment for pelvic tumors or for uterine bleeding without employment of a diagnostic curettage has been frequently condemned in the literature, but this procedure is still too widely employed in practice. The radiologist is not alone to blame for the use of x-ray therapy without establishment of a diagnosis—the simplicity of the procedure when compared to surgery often appeals to practitioner and patient alike. In the 2 cases previously mentioned, postmenopausal bleeding had been considered as being due to a palpable fibroid, and roentgen therapy without surgical exploration had been employed. It was not until recurrent bleeding prompted a consultation and curettage was advised that the bleeding was recognized as due to adenocarcinoma of the uterus developed coincidentally with a granulosa cell tumor of the ovary. In both patients I believe that the development of adenocarcinoma in the uterus would have been avoided had the first physician seeing the patient insisted on measures adequate to permit recognition of the true character and site of the pelvic tumor mass. While there can be some argument in such instances as to whether earlier removal of the granulosa cell tumor would or would not have prevented subsequent development of adenocarcinoma in the uterus, there can be no doubt that removal of the ovarian tumor plus hysterectomy would have prevented development of the cancer.

One cannot long consider the problem of adenocarcinoma of the fundus without questioning the wisdom of preserving the uterus during gynecoplastic procedures or other pelvic laparotomies on women beyond the child bearing age. Among the 163 women with adenocarcinoma whose records I have reviewed, there were 17 who prior to the development of uterine carcinoma had been subjected to a pelvic laparotomy for myomectomy, removal of an adnexum or some type of uterine suspension. In 10 instances the surgery had been performed past the child bearing age and within one to five years of the time the carcinoma developed in the fundus. In suggesting the advisability of adding a prophylactic hysterectomy to the indicated operative procedure contemplated in the pelvis, it is my belief that at least in the hands of the experienced gynecologist the mortality rate following hysterectomy is lower than the mortality due to carcinoma of the uterus among women over 40 years of age. The probability that removal of both ovaries would prevent later development of adenocarcinoma in the fundus should also be kept in mind. It is really surprising that some adequate study has not as yet settled for all time whether removal of both ovaries would prevent the subsequent development of adenocarcinoma in the uterus. Some one of the special societies or a central case reporting registry should undertake this important problem.

At the present time a most practical question concerns the effectiveness of irradiation as a means of castration. Even when the cyclic functioning of the ovary is inhibited by an intrauterine application of radium or by externally applied roentgen rays, is the estrogenic activity of the ovary permanently destroyed? In this connection it should be recalled that several urologists have observed that it was necessary to perform orchiectomy in order to stop androgenic stimulation of metastatic foci in men with prostatic carcinoma. Since it has been reported that no amount of irradiation to the testes was as effective as surgical removal, a similar situation might be anticipated in the female. While the microscopic anatomy and function of the ovary seem easily destroyed by irradiation, it occasionally seems to exhibit surprising recuperation. In some women variation in the distance of an ovary from a radium applicator in the uterine cavity may explain the ovary's ability to recover. Whatever the factor involved, I have observed 3 instances in which adenocarcinoma developed longer than a year after a woman had received 1,000 to 1,200 mg. hours of intrauterine radium. In another patient adenocarcinoma was recognized in the uterus a year after 1,800 mg. hours had been employed for functional bleeding. While it is possible that a cancer might have been overlooked the first time, Scheffey[8] and others have reported similar observations. I hesitate to believe that irradiation can be relied on to inhibit permanently estrogen formation in the ovary. The possibility of extraovarian sources for estrogenic hormone must also be considered, but I am tempted to disregard that possibility as far as endometrial carcinogenesis is concerned. It is probably much more important that the carcinogenic possibilities inherent in long continued estrogen therapy not be overlooked.

CONCLUSIONS

The most practical basis for recognizing the woman predisposed to adenocarcinoma of the uterus is suggested by data offered in support of the following conclusions:

1. The occurrence of increased or irregular bleeding during the climacteric period is experienced by only 13 women among each hundred "going through the change of life."

2. The incidence of adenocarcinoma developing prior to the menopause demands adequate investigation and treatment whenever abnormal bleeding occurs among women over 40 years of age.

13. Papanicolaou, G. N.: Am. J. Anat. **52**: 519, 1933; J. Lab. & Clin. Med. **26**: 1200, 1941. Papanicolaou, G. N., and Shorr, E.: Am. J. Obst. & Gynec. **31**: 806, 1936.
14. Papanicolaou, G. N., and Traut, H. F.: Am. J. Obst. & Gynec. **42**: 193, 1941.
15. Meigs, J. V., and others: Surg., Gynec. & Obst. **77**: 449, 1943.
16. Neustaedter, T., and Mackenzie, L. L.: Am. J. Obst. & Gynec. **47**: 81, 1944.
17. Ward, G. G.: Am. J. Obst. & Gynec. **44**: 303, 1942.

3. When postmenopausal bleeding occurs, the woman with a history of menorrhagia during the climacteric has three and one-half times greater chance of having developed cancer than does the woman who experienced no increased bleeding prior to the cessation of her periods.

In the present state of our knowledge regarding the etiology of carcinoma, few specific recommendations can be made as far as prophylactic procedures are concerned. I would urge diagnostic curettage at the first irregularity of bleeding when women continue to menstruate after 50 years of age. When pelvic laparotomy is indicated for a woman past the child bearing age it should be remembered that certainly hysterectomy, and probably bilateral oophorectomy, will prevent the subsequent development of adenocarcinoma in the fundus. Although its effectiveness has not been convincingly shown, I believe that castration by irradiation is advisable whenever menstrual irregularities indicate a diagnostic curettage during the climacteric years.

Perhaps there is too little general recognition of a fundamental role played by the ovary in the development of adenocarcinoma of the uterus. While I believe that the physician must be continuously "cancer minded," I believe it desirable that we eventually be able to recognize characteristics of the individual most likely to develop a specific type of cancer. With adenocarcinoma of the uterus in mind when postmenopausal bleeding occurs, I believe there is reason to view with greater suspicion those women who have experienced freedom from hot flushes, whose vulvar and vaginal tissues suggest continued estrogenic activity. This belief is based on the conviction that the woman whose estrogenic stimulation stops at the menopause will not develop adenocarcinoma of the uterus.

925 Delaware Avenue, Buffalo 9.

ABSTRACT OF DISCUSSION

DR. HERBERT E. SCHMITZ, Chicago: I have analyzed the menstrual histories of 45 patients who have recently been treated in our clinic for proved adenocarcinoma of the uterus. Of these, 28 patients developed their carcinoma after the menopause, 12 of them having their menopause between the ages of 50 and 54 years, 14 between 40 and 48 years and 2 being uncertain as to the time of the climacteric. The remaining 17 were still in active menstrual life, 2 being 35 and 38 respectively, 10 between the ages of 41 and 49 and 5 ranging from 50 to 56. This group does not permit the deduction that the women who menstruate past 50 are more frequently the ones who develop fundal carcinoma, as only 17 of the group had menstruated beyond the fiftieth year. The warning as to the possible danger associated with the prolonged administration of the estrogens to overcome menopausal symptoms is timely. The number of postmenopausal bleedings due to this form of therapy is ever increasing, and time alone will tell us whether or not this group will show an increased incidence of cancer. A condemnation of the use of estrogens to allay the symptoms of the menopause developing in a woman treated for carcinoma may also have its place in this discussion. In the group of 17 women who were as yet not in the menopause, menorrhagia was the complaint of 5, metrorrhagia of 2 and menomenorrhagia of 6. In 4 cases there were no menstrual symptoms, the carcinoma being a coincidental finding following hysterectomy. This definitely indicates the necessity of a thorough investigation of the patient past 40 developing menstrual irregularity—menorrhagia or metrorrhagia. In the 28 postmenopausal cases the bleeding occurred from six to twenty years after the menopause in 23 and from one and one-half to two years in 4. Twenty-six had an uneventful menopause with no change in the cycle. Of the remaining 2, 1 had had radium at the age of 53 for menomenorrhagia and developed carcinoma six years later. The second had a polyp removed at the age of 54 because of metrorrhagia and at 56, because of a recurrence of bleeding, was found to have carcinoma. Had treatment been adequate in the latter 2, the formation of carcinoma could have been avoided. The observation that adenocarcinoma of the fundus does not develop in women showing signs of estrogen deprivation is most important. If this is so, and the evidence seems to show that it is, then more radical therapy of menopausal bleeding and hyperplastic endometritis is indicated. Vaginal hysterectomy should receive preference over irradiation, and hysterectomy plus oophorectomy should be carried out in the patient past 50 who presents herself for pelvic surgery. Such treatment, however, is most radical and if adopted as a general form of treatment will undoubtedly increase the operative mortality rate in this group of women. More evidence is therefore necessary before such a form of treatment should be advocated.

DR. LOUIS C. KRESS, Albany, N. Y.: I think that large groups of cases can have this vaginal smear examination performed and in that way be an aid in case finding. In taking histories, what has come forth recently in regard to the type of patient who is susceptible to cancer? Rigler yesterday afternoon pointed out that 12 per cent of the people suffering with pernicious anemia develop cancer of the stomach and also that polyps of the stomach may become malignant. Shields Warren has given another contribution concerning the woman with adenofibrosis or chronic mastitis or some difficulty with the breast prior to the menopause, showing that these women are more apt to develop cancer of the breast in later years; then St. John in his mass study of fluoroscopy found unsuspected carcinoma in 3 of 2,432 patients. Some of us do not agree with this procedure, believing it to be too expensive, but it has been done as a case finding procedure. In my own work of analyzing a large amount of statistical data concerning cancer, I found that women with positive Wassermann reactions are more apt to develop carcinoma of the cervix than those without this serologic findings. At present I am conducting a study in six upstate New York hospitals endeavoring to get together 1,000 cases with suitable controls to give further evidence to that statement. Concerning fibroids and radiation, we still, in our state, have many men who irradiate fibroids without first doing a diagnostic curettage. Curettage is still a good method of diagnosis. Women between the ages of 35 and 50 have as the first cause of death carcinoma of the uterus.

DR. JAMES ALBERT CORSCADEN, New York: There is a dramatic agreement between Dr. Randall's findings and my own in the study of the number of carcinomas which appeared in women who had been given a radiotherapeutic menopause. He found over three times as many carcinomas among women who had been bleeding at the time of the menopause, and I found four times as many carcinomas as should appear in the normal population. It is striking that bleeding at the time of the menopause was the common factor. As regards the value of the radiotherapeutic menopause in preventing carcinomas, my experience would indicate that it gave no such protection.

Examination of the Urine.—Albumin in the urine was described by several observers before Bright's time: Frederik Dekker, in Exercitations practicae circa methodum medendi (1673); Domenico Cotugno, in De ischiade nervosa commentarius (1765); William Charles Wells, in On the Presence of Red Matter and Serum of Blood in Urine of Dropsy, which has not originated from scarlet fever (1811); and John Blackall, in Observations in the Nature and Cure of Dropsies (1813), all observed albumin in the urine. But of course Bright's account in 1827 was the event that put the procedure of urinalysis into routine clinical practice.—Clendening, Logan: Source Book of Medical History, New York, Paul B. Hoeber, Inc., 1942.

Clinical Notes, Suggestions and New Instruments

TETANUS

A REPORT OF TWO CASES TREATED WITH PENICILLIN

RUSSELL BUXTON, M.D., AND RACHELLE KURMAN, M.D.,
NEWPORT NEWS, VA.

In view of the high mortality of tetanus even when treated heroically with tetanus antitoxin, and because of experimental evidence that penicillin is effective against Clostridium tetani,[1] and since there is a scarcity of clinical reports on this subject, it is thought worth while to report the following 2 cases, both of which were treated with penicillin in addition to tetanus antitoxin:

CASE 1.—A Negro woman aged 22, seen as an office patient on June 14, 1944, complained of stiffness of the jaws for four days. She was treated expectantly but returned early the following morning with locked jaws and on June 15 was admitted to the hospital. She stated that she had noticed four days previously, for no apparent reason, stiffness of the body and pain in the back. This had gradually increased until a few hours prior to admission, when she became "stiff all over" and was unable to bend her neck or open her mouth. (No history of a puncture wound was obtained, but after the patient had been bathed a small wound of the sole of the right foot was found. This resulted from a nail in her shoe about ten days prior to admission.)

The patient lay quietly in bed and was unable to open her mouth. The temperature was 99.8 F., pulse rate 130, respiratory rate 24 and blood pressure 110/70. She was cooperative and rational. The heart, lungs and the abdomen were essentially normal except for rigidity of the rectus muscles. The neck was stiff, and the patient could open her mouth approximately ½ inch. The back muscles were stiff, and there was some arching of the back. The extremities were normal. The patellar and the biceps reflexes were extremely hyperactive.

On admission, laboratory examination of voided urine revealed specific gravity 1.015, acid reaction, trace of albumin, no sugar; microscopically, red blood cells 4 +, white blood cells 1 +, red blood cell count 3,710,000 per cubic millimeter, white blood cell count 11,500 per cubic millimeter, hemoglobin 72 per cent, polymorphonuclear leukocytes 85 per cent, lymphocytes 15 per cent. The blood Wassermann reaction was negative; the spinal fluid Wassermann reaction was negative; spinal fluid cell count, 1 lymphocyte.

A diagnosis of tetanus was made and the following treatment was instituted: During the first hospital day the patient was given 20,000 units of tetanus antitoxin intramuscularly and intravenously on two occasions (a total of 80,000 units). Penicillin 20,000 units was given intramuscularly every three hours, sulfadiazine 1 Gm. every two hours for three doses, then every four hours. Sedation was obtained by adequate doses of dihydromorphinone hydrochloride and seconal sodium as necessary. After ten hours the patient was improved and rigidity and hypersensitivity were less pronounced.

On the second hospital day 40,000 units of tetanus antitoxin was given intravenously and the same dose was given intramuscularly. Penicillin was continued, 20,000 units every three hours, and sulfadiazine 1 Gm. every four hours. The patient was given dihydromorphinone hydrochloride and seconal sodium for sedation. However, the seconal was discontinued and sodium bromide 2 Gm. and chloral hydrate 1.3 Gm. every four hours was substituted.[2] The patient was quite ill, somewhat irrational and extremely rigid with opisthotonos and almost jumping out of bed with any stimulus.

On the third hospital day the patient's condition was poor. Sulfadiazine was continued. She was given 40,000 units of tetanus antitoxin intramuscularly and 20,000 units intravenously. Penicillin was discontinued by mistake for twenty-four hours. Sodium bromide and chloral hydrate were continued.

On the following day (the fourth hospital day) the patient was much worse. Sulfadiazine was continued. Penicillin 10,000 units intramuscularly every three hours was started. At 4 p. m. she was given solution of tribromoethanol (50 mg. per kilogram) by rectum. Sedation with sodium bromide and chloral hydrate was continued as necessary.

On the fifth hospital day the patient was somewhat improved. Penicillin 10,000 units was continued every three hours and sulfadiazine every four hours. The patient's condition and treatment were approximately the same on the sixth, seventh and eighth hospital days and the only change on the ninth day was the intravenous administration of 20,000 units of tetanus antitoxin and discontinuation of penicillin.

On the tenth hospital day the patient was greatly improved, but on the eleventh day her condition was much worse and penicillin 10,000 units every four hours was again started and 20,000 units of tetanus antitoxin was given intravenously. The following day (the twelfth hospital day) the patient was again better, as she was on the thirteenth and fourteenth days. When the penicillin was discontinued on the fifteenth day she was given tetanus antitoxin 20,000 units intravenously and on the sixteenth day rigidity was again pronounced. Penicillin was begun for the fourth time, 10,000 units every three hours intramuscularly, and in twelve hours the patient was improved. This was continued four days and tetanus antitoxin 20,000 units intravenously was given on the sixteenth, eighteenth and twentieth days.

On the twenty-third hospital day the patient developed bromide intoxication and on the twenty-fourth day she had a severe reaction to her final dose of tetanus antitoxin. Following this, her condition rapidly improved and she was discharged as cured on her thirtieth hospital day.

CASE 2.—A Negro boy aged 9 years was admitted to the hospital on June 21, 1944 with the history that he had stuck a piece of wood in his left great toe one week previously. Four days later he noticed weakness, backache and difficulty in opening his mouth. He was seen by his family physician the day of admission, who advised hospitalization.

On admission the child's temperature was 99.8 F., pulse rate 100, respiratory rate 22 and blood pressure 100/80. He was suffering from photophobia, trismus, dysphagia and hypersensitivity. Opisthotonos was so extreme that a spinal tap was impossible. The neck was rigid, the jaws were locked, the back was arched and the abdomen was rigid. The biceps and patellar reflexes were extremely exaggerated.

Laboratory examination of voided urine revealed acid reaction, a trace of albumin and no sugar; microscopically a few red blood cells, 2 + white blood cells; the red blood cell count was 3,790,000 per cubic millimeter, the white blood cell count 5,500 per cubic millimeter, hemoglobin 76 per cent, polymorphonuclear leukocytes 65 per cent, lymphocytes 32 per cent, eosinophils 3 per cent. The blood Wassermann reaction was negative.

A diagnosis of tetanus was made and the following therapy instituted: Tetanus antitoxin 20,000 units intravenously and 20,000 units intramuscularly was given daily for three days. Penicillin 15,000 units was given every four hours for four doses, then 10,000 units every four hours for five days. Sodium bromide 1.4 Gm. and chloral hydrate 0.7 Gm. were given every four hours for six days, when the chloral hydrate was discontinued and the sodium bromide reduced to 0.7 Gm. and continued until the fourteenth day. At this time the patient's condition was good. He was allowed out of bed on the seventeenth day and was ready for discharge on the nineteenth day, at which time he walked with a very spastic gait but was otherwise normal. Owing to difficulties at home he was not discharged until twenty-five days after admission, at which time he was entirely cured.

In view of the high mortality of tetanus, even when treated with large doses of tetanus antitoxin, the addition of penicillin is apparently a life saving measure.

From the Buxton Clinic.

1. Herrell, W. E.; Nichols, D. R., and Heilman, Dorothy H.: Penicillin, J. A. M. A. **125**: 1003 (Aug. 12) 1944.
2. Galbreath, W.: Personal communication to the authors.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, *Secretary.*

RADIOEAR, MODEL 45-M, ACCEPTABLE

(Magnetic Bone Conduction Receiver)

Manufacturer: E. A. Myers & Sons, 306 Beverly Road, Mount Lebanon, Pittsburgh 16.

Model 45-M Radioear with magnetic bone conduction receiver is a three vacuum tube instrument consisting of a transmitter, a magnetic bone conduction receiver and a battery unit.

Dimensions.—Transmitter 4 inches by 2 inches by ¾ inch. Receiver, bone conduction magnetic, 1½ inches by ¾ inch by ⅝ inch. Transmitter, receiver and cords weigh 5 ounces. Batteries weigh 12½ ounces.

Batteries.—Voltages and current drains are as follows: A battery, 1.5 volts; current drain at full volume, 78 milliamperes. B battery, 45 volts; current drain at full volume, 1.2 milliamperes.

Acoustical Gain.—Overall gain for speech, 30 decibels. The combination of the magnetic bone conduction receiver with this instrument is unusually effective. In the firm's technical report the effective frequency range is given as 300 to 5,000 cycles per second. This is quite unusual for any bone conduction receiver. It was tested with an electrical mastoid device measured by response on a cathode ray oscillograph. There was a definite response at 4,000 cycles. This bone conduction receiver, though large, is very effective.

Physical and Mechanical Features.—The instrument consists of a black plastic case of pleasing appearance. The front surface design is indented. The on and off switch and the volume control is a knurled disk placed at the top of the transmitter. A tone control at the upper right hand corner gives three distinct frequency emphases. The aid is divided into discrete sections, each of which can be replaced by a service part when servicing is needed. This can be done at the dealer's office without using a soldering iron to make the connections.

Model 45-M Radioear.

Performance.—The instrument operates in an extremely satisfactory manner. There is an absolute minimum of case noise, little if any distortion at maximum intensity. Cord noise and feedback squeal are negligible. The three position tone control operated as represented.

Recommendations.—The Radioear 45-M Model with magnetic bone conduction receiver hearing aid fulfils all requirements of the Council on Physical Medicine.

The Council on Physical Medicine voted to accept Radioear, Model 45-M, equipped with a magnetic bone conduction receiver for inclusion in its list of accepted devices.

GENERAL ELECTRIC AIR-COOLED QUARTZ MERCURY VAPOR ARC LAMP, MODEL G, ACCEPTABLE

This therapeutic lamp, Model G, is for professional use, employing a high pressure type mercury vapor ultraviolet burner for the production of biologically useful ultraviolet radiation. The lamp is designed to operate directly from an alternating current source without the aid of a rectifier. A simple "on and off" switch is the only regulating device.

It consists of a sturdy mobile base unit, the center of gravity of which is low enough for stability of the lamp when moved about by an attached handle. The base unit is equipped with four ball bearing, swivel, rubber-tired casters of at least 5 inch diameter. The base unit houses the transformer and the "on and off" toggle switch and is provided with a handle for easy manipulation of the lamp. The transformers for the 115 and 230 volt units are designed to operate the lamp at any voltage between 100 and 125 volts or between 200 and 250 volts respectively, and at 50 or 60 cycles as specified. A rubber insulated line cord at least 12 feet long with an attachment plug and lead for easy grounding of the unit is furnished. The apparatus weighs 150 pounds.

The vertical supporting column is mounted on a ball bearing turn table permitting a 360 degree rotation about its vertical axis. The vertical column is equipped with tracks to serve as guides for ball bearing rollers on the vertical carriage. This vertical carriage is counterbalanced to permit easy positioning within a range of at least 36 inches with a minimum height of 38 inches from the floor. A lock is provided for fastening the burner housing at any position within this range.

General Electric Air-Cooled Quartz Mercury Vapor Arc Lamp, Model G.

The horizontal travel is 12 inches, and a lock for securing the burner housing in any position within this range is provided. The minimum and maximum distances from vertical column to center of housing are 10¾ inches and 23½ inches respectively.

The fork supporting the burner housing rotates through 360 degrees, and the burner housing rotates through not less than 180 degrees within the fork. Suitable means are provided for immobilizing the work and the burner housing in any position.

Burner.—The burner used in this lamp employs an alternating current, mercury arc, between nonactivated electrodes in fused quartz. It is a high pressure uviarc GE-VA-3-360W, 360 watts, 138 volts, manufactured by the General Electric Company and is automatically started by means of an auxiliary starting device which is readily accessible.

The burner housing accommodates the chrome plated reflector and burner. It is equipped with shutters to limit the area of radiation or, when closed, prevent all rays from leaving the housing without extinguishing the burner. Within the housing, clips are securely mounted to support the burner in proper position for operation and to permit easy removal when necessary.

Ventilation of the burner housing is adequate to permit continuous operation of the lamp with the shutters closed.

A self-winding steel tape to measure the distance between burner and patient is built into the housing.

Radiation and characteristics are as follows:

Wavelength in Angstrom Units	Radiation Microwatts per Sq. Cm. at 30 Inches
2,537	64.7
2,652	44.1
2,804	20.6
2,894	11.5
2,967	29.6
3,022	54.6
3,129	122.0
3,654	173.0

These values were determined with the aid of the special double monochromater and crystal quartz optical parts on the burner in air without a reflector. These data are the average on three burners operated at 360 watts.

In a laboratory acceptable to the Council, an erythema test on the lamp was made. At a distance of 30 inches from lamp to the medial aspect of the forearm the time to produce minimum perceptible erythema on the untanned skin is forty-five seconds. The lamp is convenient to manage, adjusts easily and is well constructed. It will do therapeutically that which is laid down in the Council's adopted article "Statement on Ultraviolet Therapy."

The lamp is attractively finished in a combination of cream-white and black; all exposed metal parts are rust proofed.

Two pairs of ultraviolet goggles and a quantity of burner cleaning fluid are furnished with each lamp. With each lamp there is included an instruction book to cover installation, operation and maintenance, and a manual of standardized operative technic.

The Council on Physical Medicine voted to include the General Electric Air-Cooled Quartz Mercury Vapor Arc Lamp, Model G, in its list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 6, 1945

THE PEPPER COMMITTEE REPORT

The Senate Subcommittee on Wartime Health and Education, a subcommittee of the United States Senate Committee on Health and Labor, has just issued its interim report. THE JOURNAL makes this report available in full in this issue. Attention should be called particularly to the emphasis on the use of government aid in the development of medical facilities where the need can be shown, government aid to medical education, medical research and the development of medical prepayment plans, and government assistance in certain situations in which the needs are clearly apparent for preventive medicine and for general health and planning toward a nationwide network of medical facilities.

The report makes no specific recommendation in regard to health insurance but does point out that some form of group financing is desirable. It considers voluntary prepayment plans, compulsory sickness insurance, tax supported medical service or various combinations of these methods as technics to be considered.

Especially significant is the following paragraph from the report, which emphasizes state planning and control:

> In order to permit local initiative and control, state programs should be drawn up by state health planning commissions in cooperation with local authorities. In drawing up state plans the commissions should consider the needs of all sections of the state, should include in the plan all suitable existing public and voluntary hospitals, and should plot the new construction as well as the expansion or replacement of existing facilities needed for adequate service. Before federal funds could be granted, however, overall state plans and individual projects should be reviewed and approved by the United States Public Health Service to make sure that they meet certain minimum standards of construction, operation and complete, coordinated service. There should be reasonable assurance that a new facility will have enough patients to justify its existence. In communities where sufficient income from fees of individual patients does not otherwise appear probable, provision for group prepayment plans or tax-supported services, or both, should be required.

The report reaches us just as THE JOURNAL goes to press. The time is too short for detailed consideration of the various aspects of this report. The report, in general, would seem to be a more scientific, carefully considered document than has heretofore been available as a result of previous hearings in this field. The committee emphasizes that its findings are preliminary and that the subcommittee expects to continue its work with further hearings and with studies of the various aspects of the health problem, such as rural, industrial and school health, the health needs of veterans, medical research and medical education.

THE SHORTAGE OF NURSES FOR THE ARMED FORCES

Mr. Basil O'Connor, chairman of the American Red Cross, sent to every chapter last week an appeal for an immediate maximum Red Cross effort to secure 10,000 additional nurses needed by the armed forces. The rapidly mounting casualties in Belgium demand a maximum of medical and nursing care. Eleven army hospital units, Mr. O'Connor reported, are about to go overseas without any nurses—a condition unprecedented in the history of our country. The war is far from being ended, yet already the need for careful rationing of nursing service has been demonstrated. That need will intensify in the months to come. The patient load in army general hospitals in the United States has more than doubled in the last nine months without the necessary increase in nurses.

The Red Cross, in its messages to the public, has emphasized ways in which the public can help in saving nursing service and thus release nurses for military duties. The physician can help by making certain that nurses are assigned only to cases in which nursing service is absolutely essential. The employment of special nurses for any except critical illnesses is unwarranted. Nurses are being used in hospitals occasionally for services other than actual nursing. These are services in which a nurse's aide, a dietetic aide or some similar temporary assistant might be helpful. Doctors know the nurses in their immediate communities. They can help by urging every nurse and retired nurse not eligible for military service to take an essential nursing job and thus to fill the ranks on the civilian front. Doctors can be helpful by urging every registered nurse available for military service to submit an application.

Practically every American family has at this time a son, a brother or an immediate relative in the armed forces. It takes good nursing to bring about recovery of those wounded in battle. The ratio of nurses in our military hospitals in this country is 1 to every 22 patients and abroad 1 nurse to every 12 patients. In many of our civilian hospitals the nursing staff today is 1 to 3, 5 or 8 patients. The administrators of hospitals can aid greatly by making sacrifices to release some of these nurses for military duties. As Janet M. Geister, editor of the *Trained Nurse and Hospital Review*, has emphasized, there is not an instance on record of a nurse putting

herself on a case. Only doctors and hospital administrators prescribe nursing. The nurse depends on the doctor for her release from civilian duties. As long as the doctor says to her "You are needed here just as much as you are out there" she can cheerfully avoid applying for military service.

Attention must be called particularly to the wasteful use of nursing service at this time by large industries, which keep nurses sitting idle much of the time in first aid stations and industrial dispensaries. The unnecessary full time employment of nurses as bystanders in physicians' offices must also be controlled. Under the stress of war, doctors can well afford to permit women patients to prepare themselves for examination or at least to train the office secretary or attendant in these none too technical duties.

Latest reports from the Army and Navy indicate that nearly 75,000 nurses have already applied for service with the armed forces, which represents nearly 30 per cent of all active trained nurses in the country. Of the 75,000 nurses who applied, almost 16,000 were rejected. Today there are 47,478 nurses on duty with the Army, and 11,822 were rejected for physical or professional reasons. Up to December 1944, 6,641 nurses had been honorably discharged because of medical reasons. In the Navy 15,519 nurses applied for service, of whom 11,499 were assigned to the nurse corps and 4,020 were rejected for physical and professional reasons. Honorable discharges have been given to 3,685 nurses by the Navy, principally because of marriage, as the Navy nurse corps does not accept married nurses. The National Nursing Council for War Service indicates that there are in the United States about 265,000 active nurses of all ages, married and single, and including those with children under 14 years of age. This means that there are still nurses available if the civilian institutions will recognize the need and if hospital administrators and physicians particularly will do everything that they can to release nurses to the armed forces.

NEW SERIES OF RADIO BROADCASTS

On page 44 of this issue of THE JOURNAL will be found the announcement of a new series of network broadcasts of the American Medical Association in cooperation with the National Broadcasting Company. This will be the twelfth consecutive annual series of dramatized nationwide network health broadcasts under this joint sponsorship. As usual, from eighty to one hundred stations will no doubt be broadcasting the program from coast to coast and from the Gulf to the Canadian border.

The title for the series will be "Doctors Look Ahead." Topics will include pneumonia, penicillin, social hygiene, heart disease, sulfa drugs, "battle fatigue," the discharged soldier, rheumatic fever, refrigeration anesthesia, nutrition at home, accidents, tuberculosis, child health, postwar doctor and similar topics. The theme will be current medical progress and its implications for the future of the nation's health. Guest speakers will be invited for selected programs, but for the most part summarization of each program will be by the Director of the Association's Bureau of Health Education, under whose supervision the series will be produced.

Broadcasting a network program is only the beginning of its effectiveness. A sustaining program, that is a nonrevenue program, may be broadcast by local stations, but such broadcasting is not obligatory. If a local revenue program coincides in time with a nonrevenue network program, the former naturally receives preference. There are two ways in which this conflict can be resolved. One is by requesting the station to make recordings of the network program and rebroadcast it at a later time. Such arrangements have frequently been made, especially in the larger cities. The other alternative is to arrive at an agreement with the sponsor of the conflicting local program to accept another place on the schedule, thus permitting the network program to be broadcast. These arrangements cannot be made from Chicago. They must be made locally. The local medical society or auxiliary can often accomplish one or the other of these arrangements.

With the network broadcasts, which begin January 6 and run through June 30 each Saturday at 4 p. m. Eastern, 3 p. m. Central, 2 p. m. Mountain and 1 p. m. Pacific War Time, and the extensive and growing stock of electrical transcriptions, the radio service of the American Medical Association to the American people is fully rounded. The Association speaks to the people direct through the facilities and with the cooperation of the National Broadcasting Company, which furnishes its facilities entirely free for this purpose. By the use of platters, state and local medical societies may communicate with their people through radio channels not connected with the networks. These small stations should not be underestimated; they have large and loyal local audiences.

At a time when tens of thousands of physicians are in the armed forces, health education, especially through the smaller local medical societies, is apt to be neglected because of the shortage of doctors and the preoccupation of those who remain with the urgent problems of medical care. Yet health education is never more important than in times of national stress. For this reason the American Medical Association has at this time greatly expanded its radio service to make local broadcasting possible with a minimum of local effort. In fact, everything that really needs to be done locally to make the American Medical Association radio program effective can be done by the Woman's Auxiliary to the American Medical Association. As an aid to the publicizing of local programs, descriptive folders for local distribution will be sent to local auxiliaries on request addressed to the Bureau of Health Education of the American Medical Association.

CHEMICAL TESTS FOR INTOXICATION

Since 1937 the Committee to Study Problems of Motor Vehicle Accidents of the American Medical Association has studied carefully the relation of alcohol to traffic accidents. With the National Safety Council it has collaborated in the development of chemical tests for intoxication. In 1939 the committee reported that such tests were then compulsory in Sweden and Germany, were used in a number of other European countries and had been admitted as evidence in court in many states in this country. The committee recommended definite borderline limits for alcoholic influence in terms of amount of alcohol in the blood of the suspected drunken driver.

Legislation giving recognition to the dependability of these chemical tests has been enacted in Indiana, Maine, New York and Oregon, with Indiana pioneering in this legislative approach to the problem. In Indiana too the state police department has instituted a special course to train operators of chemical analysis equipment, and this school has grown from year to year. It includes, in addition to members of the state police department, representatives of other state police departments, municipal police departments and sheriff's deputies. One of the results of the six annual courses that have been given has been the disclosure of a need for a compact manual for training purposes and as a reference source. Such a manual has been prepared by the chief laboratory technician of the Indiana State Police, R. F. Borkenstein, under the designation "Training Manual No. 1, Indiana State Police: Chemical Tests for Intoxication." This manual explains the use of the drunkometer, the equipment used in Indiana, and indicates some of the legal implications inherent in the procedure.[1]

Legislation relating to chemical tests for intoxication should develop along uniform lines. The National Safety Council, through its Committee on Tests for Intoxication, has prepared a draft of uniform state legislation, modeled closely after the Indiana law, which embodies the borderline limits recommended by the Committee to Study Problems of Motor Vehicle Accidents. These borderline limits are as follows:

1. If there was at that time five-hundredths per cent or less by weight of alcohol in the defendant's blood, it shall be presumed that the defendant was not under the influence of intoxicating liquor;

2. If there was at that time in excess of five-hundredths per cent but less than fifteen-hundredths per cent by weight of alcohol in the defendant's blood, such fact shall not give rise to any presumption that the defendant was or was not under the influence of intoxicating liquor, but such fact may be considered with other competent evidence in determining the guilt or innocence of the defendant;

3. If there was at that time fifteen-hundredths per cent or more by weight of alcohol in the defendant's blood, it shall be presumed that the defendant was under the influence of intoxicating liquor.

Copies of the draft may be procured from the National Safety Council, 20 North Wacker Drive, Chicago 6, or from the Bureau of Legal Medicine and Legislation. The draft has been approved in principle by the Board of Trustees of the Association.

1. The material included in this manual was selected and rewritten by Mr. Borkenstein from papers and articles by Don F. Stiver, superintendent, Indiana State Police, and Dr. R. N. Harger, professor of biochemistry and toxicology, Indiana University School of Medicine.

Current Comment

THE NATURAL HISTORY OF RHEUMATIC FEVER

An unusual opportunity to study the natural history of rheumatic fever was provided by the stationing of a large body of British troops and their hospital in a remote desert isolated from outside contacts for a period of nearly a year. Copeman,[1] reporting on this subject in the *Annals of the Rheumatic Diseases* (a journal recently taken over by the British Medical Association for quarterly publication), says that the possibility of an external source of infection being the cause of the 32 patients' suffering from first attacks of rheumatic fever and of the 10 who had had previous attacks was remote. Almost every case fell into one of two groups: 1. A nonrheumatic infection whose role appeared to be to lower the patient's general resistance. This possibility allowed of a successful attack by the hypothetical specific organisms. These "preceding infections" were not always streptococcic in type but comprised diseases such as dysentery, sandfly fever and even malaria. 2. A physical factor which comprised chiefly cold, dampness or fatigue in unaccustomed quantities. Every case showed signs and symptoms common to most general infections and local signs and symptoms comprising muscle and tendon stiffness and pain leading to joint stiffness, swelling and pain. Only a small group showed any signs indicating droplet transmission. Copeman concludes from a study of the clinical features that acute rheumatic fever is basically an acute febrile and progressive form of fibrositic reaction occurring in localized areas of tendon sheaths adjacent to joints. The joint pain appears to be really referred to these adjacent areas and later, when effusion occurs in the joints, it is generally a secondary extension of the inflammatory process from the affected tendon sheaths and not a primary arthritis of blood borne origin. The cases observed could be divided into three clinical varieties: A classic type which progressed in the usual manner, a benign type which, Copeman states, has not been previously described but which appears to be nonepidemic and of short duration—he suggests the name acute febrile myalgia for this syndrome—and finally the classic type which, instead of resolving, appears to merge into a condition of chronic fibrositis which, he says, is difficult to differentiate from fibrositis arising from other causes. This concept is a considerable departure from views widely held on the subject previously.

1. Copeman, W. S. C.: Observations on the Natural History of Acute Rheumatic Fever, Ann. Rheumat. Dis. 4:11 (Sept.) 1944.

MEDICINE AND THE WAR

ARMY

MEDICAL DETACHMENT GIVEN AWARDS

Six officers of the medical detachment of an armored infantry regiment have received awards from the War Department for meritorious and gallant service on the field of battle during the campaigns of the Second Armored Division in Germany. The awards consisted of three Silver Stars and three Bronze Star Medals. Four officers, wounded in performance of their duties, have received the Purple Heart.

The medical detachment is commanded by Major Everett F. Haukenberry, Manhattan, Kan., who received a Silver Star for gallantry in action in the invasion of Italy. He was awarded a Purple Heart in France. Dr. Haukenberry graduated from the University of Kansas School of Medicine, Kansas City, in 1934 and entered the service Nov. 1, 1940.

Other winners of the Silver Star are Capt. Morris Schapiro, Bayonne, N. J. He was also awarded the Purple Heart in France. Dr. Schapiro graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1941 and entered the service Aug. 28, 1942. Capt. William M. Wallace, Scranton, Pa., who graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1938 and entered the service May 1, 1942. Both officers received the awards for action in France.

Winners of the Bronze Star Medal are:

Capt. Harry M. Segenreich, Chicago, who graduated from the University of Illinois College of Medicine, Chicago, in 1937 and entered the service Feb. 11, 1941.

Capt. James D. Huskins, Wilburton, Okla., who graduated from the University of Oklahoma School of Medicine, Oklahoma City, in 1938 and entered the service Nov. 5, 1940.

Capt. Harold B. Smith, Syracuse, N. Y., who graduated from Syracuse University College of Medicine in 1941 and entered the service Aug. 1, 1942. Dr. Smith also received the Purple Heart for wounds suffered in Germany.

The Purple Heart was awarded to Capt. George J. Van Besien, Decorah, Iowa, for wounds suffered in France. Dr. Van Besien graduated from St. Louis University School of Medicine in 1929. He entered the service May 22, 1942.

Awards received by the enlisted men, all of whom are qualified aid men and none merely litter bearers, include eight Silver Stars, six Bronze Stars, twenty-seven Purple Hearts and one Cluster to the Purple Heart. Those awards were received in campaigns on the continent. One Silver Star was received in the Tunisian campaign, and eight commendations were awarded in Sicily.

46th GENERAL HOSPITAL IN FRANCE

The 46th General Hospital (University of Oregon Medical School, Portland) was recently singled out by Gen. Jean de Laittre de Tassigny, commander of the French 1st Army, as a model for French military hospitals. This hospital is perhaps the general hospital closest to the front lines in any theater of war. Although the original plan was to set up the hospital in southern France, the speed of the allied advance led Col. J. Guy Strohm, Portland, to choose a new location in a town just liberated from the Germans (Besançon). Before coming to France the hospital had been operating in North Africa for a year, during which time it was commended for its achievements by military and civilian authorities.

Colonel Strohm distributes the credit for achievements of the hospital and its staff among officers and enlisted men. Among the officers singled out for praise are Lieut. Col. Earl D. DuBois, executive officer; Lieut. Col. Sante D. Caniparoli, chief of surgery; Major E. Murray Burns, chief of the medical section; Major Charles E. Littlehales, registrar; Major James Haworth, chief of the x-ray section; Major Vinton D. Sneeden, chief of the laboratory; Major Harriet M. Dickson, chief of nurses, and Capt. Webster T. Linn, medical supply officer. Among the enlisted men are Sgt. Erich W. P. Blaschke, Sgt. Frank H. Purpura and Tech. Sgt. Merle E. Harrison. All the officers and enlisted men are from Portland.

MISCELLANEOUS

MR. PAUL V. McNUTT PRAISES CIVILIAN DOCTORS

Urging conservation of the nation's diminished ranks of civilian doctors, Mr. Paul V. McNutt, chairman of the War Manpower Commission, recently praised the home front medical corps for "a gallant contribution to the war effort at great sacrifice." The War Manpower Commission Procurement and Assignment Service has charge of the assignment of professional men for the war period.

Pointing out that about 1,500 physicians had died on the home front from Jan. 1, 1944 to July 1, Mr. McNutt said that "all over the nation our doctors are sacrificing themselves to help us do a magnificent job. It is necessary that all of us cooperate with the medical profession in order to keep to a minimum the demands of our physicians." Mr. McNutt also said that civilians could cooperate by observing ordinary health rules and diets, calling a physician only when necessary, going to the physician's office when possible rather than calling him to the home, and placing calls early so that physicians may systematize their work and save their own strength.

Procurement and Assignment Service officials said that, when there is a real need for additional doctors in a community, WMC tries to fill the need through relocation of physicians and with those returning from service. About 200 physicians are now back in their communities from the Army, which recently reported to WMC that it is no longer recruiting doctors. About 3,000 are still needed by the Navy and a smaller number for the Public Health Service, the Federal Security Agency and the Veterans Administration.

WARTIME GRADUATE MEDICAL MEETINGS

The following subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

Birmingham General Hospital, Van Nuys, Calif.: Arterial Disease, Lieut. Comdr. Hugh Montgomery, January 10.

U. S. Naval Hospital, Oceanside, Calif.: The Pathogenesis of Rheumatic Fever, Lieut. Comdr. Robert W. Huntington Jr., January 11; Clinical Aspects and Treatment of Rheumatic Fever, Lieut. Cmdr. George C. Griffith, January 11.

U. S. Naval Hospital, Corona, Calif.: Coccidioidomycosis, Major F. M. Willett, January 11.

Ashford General Hospital, White Sulphur Springs, W. Va.: Vascular Injuries, Dr. J. Ross Veal, January 17.

Station Hospital, Fort Belvoir, Virginia: Treatment of Arthritic Joints, Dr. Custis Lee Hall, January 8; Chemotherapy, Dr. Harry F. Dowling, January 22.

Station Hospital, Fort George G. Meade, Maryland: Medical Aspect of Ruptured Intervertebral Disks, Dr. Francis J. O'Tenasek, January 5; Amebiasis and Helminthic Dysenteries, Dr. Clark H. Yeager, January 11; Newer Drugs and Their Uses in Practice, Dr. John C. Krantz, January 19; Methods of Heart Disease with Failure, Dr. Louis Hamman, January 19; Management of Compound Fractures, Dr. Harold R. Bohlman, January 26.

SURGEON GENERAL OF THE MILITARY ORDER OF THE WORLD WARS

Dr. Cornelius O. Bailey, Los Angeles, Major, U. S. Army Medical Corps, World War I, has been reelected as Surgeon General of the Military Order of the World Wars.

ORGANIZATION SECTION

ANNUAL CONFERENCE OF SECRETARIES AND EDITORS OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

DR. JAMES R. BLOSS, Chairman of the Board of Trustees of the American Medical Association, Presiding

FRIDAY, NOVEMBER 17—MORNING

DR. JAMES R. BLOSS: It is a happy privilege to welcome you to the headquarters office for your annual conference. I wish to assure the members of the conference of the interest of the Association in the affairs of the constituent state and territorial associations, and also the component county and district societies. These conferences present an opportunity to the representatives of the constituent associations to refresh themselves about the activities of the parent organization, and what its councils and bureaus and departments are accomplishing. At the same time it presents an opportunity to your officials to find out the things which are at the moment interesting state associations. It also gives those who happen to be responsible for the conducting of the affairs of the parent organization an opportunity to learn the criticisms or the suggestions from the constituent body. I would urge that you take time as individuals to visit the various departments of headquarters, the bureaus, the councils and learn more of what is being done to further the interests of the citizens of this country by providing them better medical care. If I might offer one suggestion to the editors and the secretaries, it would be that you try to educate your own members. Many of the criticisms are due to the fact that the membership of the profession are absolutely ignorant of what is being done, and those most loud in their criticisms are generally the least informed.

Dr. D. L. Cannon, Montgomery, Ala., was elected chairman.

Address of Dr. Herman L. Kretschmer, President of the American Medical Association

DR. HERMAN L. KRETSCHMER, Chicago: In my travels through the country, attending various state meetings as well as other medical meetings, the subject of greatest interest among physicians was prepayment medical plans. Many state societies had this subject under discussion and were ready to adopt a plan or had adopted one. Many of the members had but vague ideas about the actual working of the plan under discussion. There has been a definite upward trend in both the number of plans in operation and the number of people participating in these plans. For that reason I am glad to see that your conference has these plans under discussion. We are the best insured country in the world. Upward of 60,000,000 people carry life insurance. This wide distribution is the result of education; I believe we can educate the people to insure themselves against sickness and hospital costs. To provide for protection against illness is, I believe, the privilege of the citizen. I do not believe that the people of this country are so incompetent that the government must do this for them.

As a result of the great achievements of medicine during the past fifty years, we have the lowest death rate of any large country, and the span of life has been lengthened. This achievement has produced other problems. The number of people in this older age group leads to problems in unemployment and security. The medical side has to do with the degenerative diseases. We have made progress and I think we have a right to let the public know of this new achievement. I refer to the treatment of bladder disease with its low incidence of complications and practical absence of mortality and to the results that are accomplished in the field of treatment of prostatic obstruction with its low mortality and morbidity, the result, of course, of the use of the resectoscope. I need not refer to the many achievements of surgery in the aged. I mention these only to emphasize the fact that we are making progress in the diseases of the aged. Through the state medical societies and through the state journals and radio programs an extensive educational program can be launched. Many of the diseases in this aged group cannot be cured. No doubt many more will be; others cannot. However, I believe we should take the public into our confidence and let people know that this subject is under study and tell them of our progress with problems, such as the one on vitamins, the one on therapy, the one on blood banks and that sort of material.

Address of Dr. Roger I. Lee, President-Elect of the American Medical Association

DR. ROGER I. LEE, Boston: I want to speak of the activities of a committee of the American Medical Association in regard to postwar medical service. About two years ago, at the suggestion of Dr. Paullin, the Board of Trustees of the American Medical Association voted to take the initiative in undertaking the planning of medical service after the war. As a result of that vote a committee was appointed and two other national bodies, the College of Physicians and the College of Surgeons, were requested to designate certain other members of this committee, which became a joint committee. This joint committee then added to its numbers from time to time. A great many people wanted to join the Joint Committee on Postwar Medical Service, but it has been necessary, if we are going to maintain the committee as a committee, to restrict for the moment any additions to it.

The result of the labors of this committee has been duly printed in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. In World War I the average doctor found his military service just an interlude between his items of practice. In World War II some of these men have now been on military service for four years, and the end is not yet. Everybody except the members of the committee seemed to know exactly when the war was going to end. We got a lot of advice about how rapidly we would have to proceed in order to educate these men, but the war seems to be still going on. We also have had intimations from the Surgeons General that medical officers will be kept in the service for some time after the country may be at peace on the European front. There are also other variables. Another variable, of course, is the action of Congress in adopting some scheme of compulsory military service or the continuation of the so-called Selective Service System, which, if it brings to the Army other men or a new army of millions of men, will require a good many doctors.

The committee decided early that it was necessary to know the facts. So the committee got out a pilot questionnaire, and Colonel Leuth will show some lantern slides detailing these various questionnaires. As a result of the pilot questionnaire, a questionnaire was sent to all the medical officers in the Army, the Navy, the Public Health Service and the Veterans Administration. That number is approximately 60,000 in round figures. We have already got back over 18,000, and there is a likelihood that we will get back some 25,000 replies. The percentage of replies was astounding to all of us, particularly to myself, because, as I have often said, I am allergic to questionnaires. Our statistical friends, who know everything and correctly, said that we would not get more than 18 per cent and that that would be a fair figure. We are going to get over 50 per cent replies from these questionnaires, and I think that indicates very well the interest of the medical officers in the subject matter of the questionnaire.

It must be realized that these answers are the way the men felt at the particular moment when they signed or filled out the questionnaires, which are signed or not according to the option of the officer. The results of those questionnaires have been illuminating. In the first place—it seems to me this is most important—most of these fellows want to come back and to get into practice. The overwhelming majority of them do not want to stay in the Army or the Navy or the Public Health Service or to be in government positions. A certain percentage appropriately do, but the main object of these men is to get back into some form of practice and, it would seem, a form of practice very similar to the existing practice in these United States.

There has been an accelerated program in the medical schools. These medical students are whisked through the medical schools

in three years instead of four. They have stopped saying an accelerated program without lowering of standards because everybody knows that an accelerated program does lower the standards, no matter what the highbrows may say about it. Furthermore, they are whisked through the hospitals on what is known as a 9-9-9 basis, with the result that these fellows are taken into the Army and they will have two, three or four years of service in the Army without any adequate acquaintanceship with private practice. They may, if they are in service with certain WAC and WAVE organizations, have a certain amount of experience with gynecology and perhaps its allied specialty, but on the whole they are going to deal mostly with reasonably healthy young men in the main who get certain diseases and who get the wounds and traumatisms of war. So that their experience is very limited, and they wisely, according to the questionnaire and according to the beliefs of most people, want to enlarge this experience so that they can cope with civilian practice. Based on those figures, not all of which have been tabulated as yet, the Council on Medical Education and Hospitals of the American Medical Association has undertaken to provide additional services for these returned men.

The men have not come back as yet, but I think that, when they do come back, through the activities of this committee opportunities will be ready for them. It is estimated by Dr. Victor Johnson that approximately twice as many opportunities for internships and residencies will be necessary as are existent at the present time. That can well be taken care of in certain hospitals and not so well in other hospitals, and the role of the medical schools, of course, will be important.

The committee was held up at one stage by the fact that Congress had not passed what is known as the G. I. Joe Bill. Nobody knew what the opportunities would be for the returned medical officers. Finally Congress passed the bill, putting the responsibility of the education of the returned veterans up to the Veterans Administration. In THE JOURNAL, November 11, appears a subcommittee report of the Joint Committee, consisting of Dr. Coller, Dr. Palmer and Father Schwitalla. They went to Washington and sat with the Veterans Administration and the Surgeons General and got out a statement which the Veterans Administration was glad to countersign. The interpretation in general is that the Veterans Administration will consider that any medical officer of any age will be regarded as having had his training interrupted and that he will be entitled to continue his training. He will get training on the basis of $500 a year for instruction and subsistence at $50 a month if he is unmarried, $75 or perhaps more if he is married and depending on how many children he has. We all realize that that is not much money for a man who has perhaps been a major. We would like it if that amount of money could be increased. There have been certain attempts to see whether other funds might not be raised, but so far that movement has not come to any particular fruition. We have also explored the possibility with the Surgeons General as to keeping the men in the Army and perhaps giving them refresher courses or certain educational advantages while they are still drawing pay in the Army. We have worked in close cooperation with the Surgeons General and they are sympathetic to our point of view. However, there are no tangible results as yet for a good many reasons. The war is not yet over. Each department has a budget which has to be lived within, and Congress appropriates the money or does not appropriate the money, but the committee has been active in trying to secure as many benefits as possible for these returned medical officers. I want to express the appreciation of this Joint Committee to the Surgeons General for their cooperative attitude.

The committee is to establish an Office of Information. The basis that is behind all this activity is our feeling of affection and of respect for the returning medical officer. On a broader plane, it is to improve the medical practice of this country, because the medical practice of this country is going to be carried out by the doctors of this country. The more education, the more training, the more professional rehabilitation that these medical officers may get, the better will be medical practice. With the Office of Information every attempt is going to be made to see that these men are located or relocated in conditions and in localities which are satisfactory to them.

THE BUREAU OF INFORMATION

Its Functions and Operation

Lieutenant Colonel Harold C. Lueth
MEDICAL CORPS, ARMY OF THE UNITED STATES

A discussion of the newly created Bureau of Information should be helpful to all. At the outset I wish to state that my remarks are not to be construed as the official opinions of the Surgeon General or of the War Department. They are simply my observations as a member of the American Medical Association.

The Bureau of Information is now an actively functioning unit of the American Medical Association. The House of Delegates at its 1944 annual session in Chicago created and authorized the establishment of a Bureau of Information. In the report of the reference committee suggesting the creation of a bureau, the following words appeared:

> . . . the establishment of a Bureau of Information in the Central Office in Chicago and likewise the effort to stimulate the state and county societies to establish local offices which are to cooperate with that bureau in bringing the necessary information to those who desire it. This central bureau might also serve the purpose of affording practitioners of medicine the opportunity for locating in new communities, and this matter should be given adequate publicity. . . .

The activities of the Bureau of Information were primarily to assist returning medical officers in their educational, licensure and placement problems. Specifically, the aims of the Bureau were considered to fall into three categories:

1. To provide veteran medical officers with information concerning educational opportunities immediately after their term of military service.

2. To provide veteran medical officers with information concerning state licensure and facilitate their procurement of licensure in states other than the state of former practice and/or licensure.

3. To provide the medical officer with information concerning medical, social, economic, financial and other phases of community life that will enable him to make a wise selection of a permanent location in which to practice medicine.

1. *Information on Medical Education.*—Considerable progress has been made in obtaining information that will be helpful to veteran medical officers in finding suitable educational facilities on their release from the armed services. Through the efforts of the Committee on Postwar Medical Service a questionnaire was prepared to gather as much information as possible from medical officers now on duty concerning their future plans. On approval and concurrence of the Surgeons General of the Army, Navy and Public Health Service, questionnaires were mailed to each medical officer on duty with the armed forces. All are familiar, no doubt, with the questionnaires. Reports [1] have appeared in THE JOURNAL concerning the results obtained from these questionnaires. A tabulation of the first 11,019 returned questionnaires indicated that men desired two types of broad training:

A. Short refresher courses of less than six months' training, reviewing the major developments in medicine, surgery and allied fields.

B. Long courses of one, two or three years' duration similar to the present internships and residencies.

In general, men in the older age brackets desired refresher courses, while younger men desired resident training of one to three years.

Throughout all these studies the Council on Medical Education and Hospitals of the American Medical Association has been most cooperative and helpful. Drs. Victor Johnson and F. H. Arestad, Secretary and Assistant Secretary respectively of the Council, have prepared and distributed a companion questionnaire to the hospitals. Since the needs of the medical officers have been determined by the Postwar Planning Questionnaire, the possible enlargement and extension of civilian hospital training facilities were the next problems. They are being determined by a careful statistical study of the returns from Dr. Johnson and Dr. Arestad's questionnaires. From the prelimi-

1. Results of Pilot Questionnaire to Physicians in Service, J. A. M. A. **125**: 558 (June 24) 1944. Lueth, H. C.: Future Educational Objectives of Medical Officers, ibid. **125**: 1099 (Aug. 19), 1944.

nary studies [2] it appears likely that a doubling of the present educational facilities in approved hospital internships and residencies will be sufficient to provide adequate instruction for returning medical officers. In arriving at their estimate Drs. Johnson and Arestad assumed that medical officers would not be simultaneously released from service but that their return to civil life would extend over a period of at least two years.

The Bureau of Information is appreciative of the assistance of the Council on Medical Education and Hospitals and will continue to work in close harmony with it. The Council on Medical Education and Hospitals will place at the disposal of the returning medical officers all of its available information as to existing hospital and medical school facilities. An inventory of all hospital training facilities will be kept up to date by the Council, so that the veterans can be at all times informed of existing vacancies. Operational details of such an inventory are dependent on many factors that will have to be solved at a later time. There is every reason to believe that with present developments of the Council they will be well equipped and capable of handling this phase of the work.

Men returning from the armed services will want to be placed in an educational institution as soon after their release from military duty as possible. It is extremely important that some central routing agency have available current trustworthy information. The Bureau of Information was created for the purpose of aiding returning medical officers, and it will work closely with the Council on Medical Education and Hospitals. There is every indication that the Council, and especially the staff members at the Association headquarters, will be most helpful to the Bureau in this phase of the activities.

2. *Information on Licensure.*—The Bureau of Legal Medicine and Legislation has been very helpful in supplying information concerning state laws in regard to licensure. Even though the Bureau of Information has been established for less than sixty days there have been many inquiries from medical officers, both on duty and released from military service, concerning eligibility for licensure in states other than those in which they were originally licensed to practice medicine. Efforts are being made by the Inter-Agency Affairs Committee of the U. S. government and the Department of Justice with a view toward facilitating the licensure of returning medical officers. While it is difficult to predict the success of this proposed legislation, there is reason to believe that there will be changes in some states relative to reciprocity and licensing of veteran medical officers. Mr. J. W. Holloway Jr., Director of the Bureau, has given prompt information on all such inquiries, and he has done much to help the Bureau of Information in the integration of the efficient machinery of his bureau with that of the Bureau of Information in meeting these problems.

3. *Information on Medical Practice.*—The most important work of the Bureau of Information is supplying the individual medical officer with information concerning medical practice in various communities. A number of returning medical officers will consider various communities in making their selection of a locality in which to establish themselves in the practice of medicine. The Bureau of Information is not a placement agency; it is not an employment agency. The Bureau of Information is an entirely voluntary agency without any power to direct the location of a physician.

The Bureau of Information can, however, give invaluable assistance to the veteran medical officers in enabling them to make a wise selection of a community in which to practice medicine. To this end a summary sheet was prepared that would give the returning medical officer a "thumb nail sketch" of the community.

A. INQUIRIES

Inquiries addressed to the Bureau of Information will be handled according to the nature of the inquiry. All inquiries concerning further hospital training of veteran medical officers will be referred to the Council on Medical Education and Hospitals for assistance in framing replies. Inquiries concerning licensure will be referred to the Bureau of Legal Medicine and Legislation for information on which to base a reply. In the event that there are specific inquiries concerning licensure in only one state, a carbon copy of the reply to the veteran medical officer will be forwarded to the secretary or executive secretary officer of the state concerned.

It would be difficult and inadvisable for each state medical society office to attempt to set up files of information on both medical education and hospital facilities throughout the forty-eight states and also on the complex legal consideration of the state and territorial licensing boards. Problems involving both hospital training and licensure can therefore be handled best from a central agency. Copies of such replies from the Bureau of Information will be forwarded to the offices of the state medical societies concerned.

Inquiries concerning placement or suitable locations in which to practice medicine will be referred for solution to the interested state medical societies. It is contemplated that an individual reply will be sent by the Bureau of Information to all medical officers requesting assistance in the selection of a location in which to practice, telling them that definite information can best be obtained from the secretary or executive secretary of the state medical association. A copy of the summary sheet for the county will also be inclosed so as to give the inquirer an outline of the pertinent facts concerning the community under consideration. Carbon copies of the replies to inquiring veterans will be forwarded to the appropriate state medical association officers for their information and guidance. It is hoped that the state medical societies will enter the problem at this stage of development and initiate correspondence directly with the men.

The county was chosen as the unit, since there is considerable information readily available about the counties of the United States. The county is a definite political unit and its various aspects can be easily compared with other counties throughout the country. Copies of the tentative form to be used by the Bureau of Information have been distributed. Information concerning the counties will be entered on heavy manila cards and retained in the files of the Bureau of Information for future use. When an inquiry is made concerning a county, one of the staff will withdraw the county information sheet and type the information on a mimeographed sheet. In addition, an individual reply, as described, will be mailed to the veteran together with the summary sheet.

Two copies of the county information sheet will have been previously mailed to each state medical association for its use. The state offices may retain one copy in their files and send a second copy to the county medical societies. It is expected that the state and county medical society officials will review the summary sheets very carefully and make all necessary corrections and additions. A copy of the corrected county summary sheets should be returned to the Bureau of Information at the earliest possible time. Information supplied by the states and counties will be integrated with the records of the Bureau of Information. In that manner it is expected that the state medical association will supply supplementary information that will provide the most accurate information procurable for the returning medical officers. A monthly reporting system will be initiated in the near future whereby the state medical associations inform the Bureau of Information of all important changes concerning the data on the county summary sheets. It is especially desired that the information concerning the number of physicians be kept as accurate and up to date as possible.

B. COUNTY INFORMATION SHEET

A form that will include pertinent information concerning the medical, hospital, economic, financial, climatic, social and other conditions of the county was prepared. After considerable thought, mimeographed sheets have been adopted as a summary of information that will be helpful to the returning medical officer.

It is difficult to determine the exact size of a community in relationship to medical practice. After all the factors involved were considered, the county was chosen as a representative unit since there is considerable information readily available about counties. It is, of course, appreciated that there are many difficulties in utilizing the county as a unit, particularly in metropolitan and suburban medical practice. However, for purposes of uniformity and record keeping the county was the unit chosen.

2. Johnson, Victor, and Arestad, F. H.: Educational Facilities Required for Returning Medical Officers, J. A. M. A. **126**: 253 (Sept. 23) 1944.

A sheet was prepared for each county of the United States, giving as much specific information concerning the county as would be of practical assistance to the discharged medical officer in making his selection of a location to practice medicine. The heading of the sheet contained the name of the county and state, and the names of state and county medical society officers with their addresses. The body of the information was divided into two parts, the left hand side devoted entirely to the medical aspects of the community.

I. *Medical Information.*—It contained the following subject heads:

A. Hospitals.
B. Public health facilities.
C. Other medical facilities.
D. Physicians.
E. Remarks.

A. *Hospitals:* From the information on file at the Council on Medical Education and Hospitals, the number and types of hospitals were listed. To the right, an average number of beds, hospital census and number of births were given. This information should give the medical officer some concept of the hospital facilities in the community.

B. *Public Health Facilities:* A short statement containing the name or names of public health officers was entered under this heading. If possible there will be a note stating whether they are full time or part time men. Availability of public health nurses and other facilities will be entered under this section.

C. *Other Medical Facilities:* Health department clinics, state health department programs, unusual laboratory facilities and related institutions as listed by the Council on Medical Education and Hospitals were included under "Other Medical Facilities." Student health departments of colleges and universities will also be listed.

D. *Physicians:* The number of physicians in each of five age groups was entered under this subhead. From the latest available data contained on the punch cards, those in active practice, those in health department teaching or other branches, and those retired from practice, were given. It is appreciated that there are discrepancies in the records of this office compared with actual conditions in some communities. As men leave the Army and enter medical practice there will be constant changes in these figures. It is necessary for the various state and county medical societies to keep up to date records concerning the number of physicians in practice in these communities. The success of the Bureau of Information and the reliability of this information are entirely dependent on the cooperation of the various state and county medical societies. While some of this information may be obtained from other sources, the chief reliance in gathering this information will of necessity rest with the state and county medical societies. By means of machine records it is believed that periodic records can be supplied to your office, thus reducing the amount of clerical and administrative work necessary in making these reports and add greatly to the speed and accuracy of the work.

E. *Remarks:* No entries were made under "Remarks," since that space was made available for such relevant and timely remarks as the state and county medical society officers would like to enter. Again, it is desired that only such information as will be helpful to the returning medical officer be entered on the county summary sheets.

II. *Economic, Social and Financial Information.*—A. General Statement: Under the heading of "General Statement" this unfinished sentence appears: "This county is largely. . . ." It is requested that state and county medical society officers enter such terms as industrial, agricultural, mining or a short description of the activities of the community. Whenever possible, a short descriptive sentence or two should be added by the state medical society officers or the county medical society officers so as to provide as complete a picture of the activities of the county as is possible in so limited a space.

B. Location and Climate: A few sentences concerning the general location and the average climate of each community as determined by the U. S. Weather Bureau will be entered under this heading. Additional information by state and county medical society officers concerning well recognized climatic features is solicited.

C. Population: All population data were obtained from the Bureau of Census. The 1940 population was given first, since that is the latest decennial census. It was also assumed that 1940 was an index of the prewar status of the communities of the United States. Since the war there have been great shifts in population, so that the estimated 1943 census was entered directly under the 1940 census. A comparison of these two figures reveals the change in the community resulting from wartime shifts in population.

D. Principal Cities: The principal cities—that is, cities of over 2,500 population in 1940—were listed by name together with their population. These data were also obtained from the 1940 census reports.

E. Schools: The number of elementary, secondary and parochial schools, and colleges and universities, will be entered under this heading. As much information as can be obtained from the Office of Education will be entered as is appropriate. Any additional information that state and county medical officers may have at their disposal should appear under this heading.

F. Retail Sales: From previous studies it was shown that total retail sales were an indication of the wealth of the community. A special study of the distribution of physicians in the state of Wisconsin by Mr. C. F. Deibler and me revealed that retail sales were a good index of the wealth of the community. The total retail sales in thousands of dollars for 1943, as estimated by *Sales Management*, were listed under this subhead. This first entry may be perhaps large and confusing to the average doctor, so a second entry of county sales per capita was made to give a comparison between a county and the state as a whole. State sales per capita were listed thirdly.

G. Residence Telephones: The number of residence telephones in 1940, both by county and by state, was recorded from data furnished by the American Telephone and Telegraph Company.

H. Miles of Highway: The number of miles of highway for county and state, as given by the state highway commissions, was entered under the next subhead.

I. Dwelling Units in County: Some features of the social and economic life of the community may be determined by the number of dwelling units in the county. The total number of dwelling units in 1940, as provided by the Bureau of Census, was entered. A second entry showed the number of dwelling units occupied by the owner. The third entry was the average monthly rental, including urban and rural nonfarm buildings.

4. *Operation of the Bureau of Information.*—The successful operation of the Bureau of Information is dependent on the active cooperation and close harmony with the state and county medical societies. As soon as available, each state medical society will be supplied with two copies of the information sheet just described. It is suggested that the state medical society retain one copy and forward a second copy to the county medical society. As changes occur within the county and state, they should be forwarded to the Bureau of Information for integration with its records. A monthly reporting system is being devised that will reduce the amount of work and insure timely reports. Inquiries from medical officers to the Bureau of Information will be answered promptly. Inquiries concerning educational and licensure problems will be answered by coordinating the information of the several departments at the Headquarters of the Association. Inquiries concerning location and medical practice will be acknowledged by the Bureau of Information and a copy of the county summary sheet forwarded to the medical officer. A carbon copy of the reply of this office will be forwarded directly to the state medical society for further handling. It is anticipated that state medical society officers will continue the correspondence with the man and assist him in placement in a suitable location.

The Bureau of Information is a new department of the Association. It is capable of giving a new type of service to fit the needs peculiar to returning medical officers. The Bureau of Information hopes to work in closest harmony with the various state and county medical societies in their activities relating to the returning medical officers. The success of the Bureau of Information is directly dependent on the support and cooperation of the state and county medical societies. Ever since the founding of the American Medical Association, the profession has prided itself on the amount of unselfish service it has given. The successful operation of a Bureau of Information entails a great amount of painstaking clerical work on the part of many members of state and county medical societies concerned with its operation. To give this new and useful type of service to returning medical officers is a real contribution. To assist returning veterans in selecting a location is a new service that medical societies can give. Repeatedly it is said that medicine "can keep its own house and manage its own affairs." The successful operation of the Bureau of Information presents a real challenge to all of us to prove our ability to provide for our own.

DISCUSSION

DR. JAMES STEVENSON, Tulsa, Okla.: I should like to ask whether Colonel Lueth in his questionnaire contemplated finding the number of osteopaths who are in practice in certain communities. That might possibly influence these young men.

COLONEL LUETH: We have no information on the number of osteopaths in the various communities.

DR. HOLMAN TAYLOR, Fort Worth, Texas: How practical would it be to include in your table a statement of the number of doctors who have come into the local community since the beginning of the war, in other words, replacement doctors? Also how feasible would it be to assemble a lot of these factual data in the state offices? I can see the impracticability of it on a national form pertaining to the actual percentage of service the doctor may render. For instance there may be five doctors in the community capable, because of physical condition, of rendering the service of only three.

COLONEL LUETH: It would be rather difficult on a national basis to include the number of relocations in our little table. Any of those suggestions should come under "remarks." If we can get this much information from all the states, if we can more or less initiate them as to this information, we shall be in a good position to add those other items.

DR. TAYLOR: Would it be well to indicate that those data might be referred to under "remarks"?

COLONEL LUETH: I am really planning to write a booklet of instruction, a code booklet for each item, and I will send it out with these sheets to the state societies. I bring this material to your attention because I want to invite as many suggestions and criticisms as possible, so that we can have a final form that will be acceptable. It is appreciated that some states can easily supply this information. To other states it is going to represent a large task.

DR. R. B. ANDERSON, Fort Worth, Texas: A county medical society group has had an application from a returned medical officer who has come there as a new man, medically discharged perhaps. He has made application for membership. They do not have anything but his statement regarding his past, and that may be some time since he has been away from our avenues of knowing about him. They come to us to get that information. If there was some way, in justice to that man, that we could state that his record of service is good, it would be of value to that man as well as to the county medical society.

DR. WALTER L. BIERRING, Des Moines, Iowa: I wonder if Mr. Holloway could give us some kind of preliminary report as to the licensure problems that have come up in connection with the returning medical officer.

MR. J. W. HOLLOWAY JR., Chicago: I do not know that any particular problems have come up yet. There may be some that will come up in the future as the men get out of service. That is particularly true where the young physician did not bother to obtain licensure in any state before going into the Army or into the Navy Medical Corps. I think from the questionnaires that have come back there are relatively few in that category.

(To be continued)

WARTIME HEALTH AND EDUCATION

Interim Report

[Pursuant to S. Res. 74]

REPORT TO THE SENATE COMMITTEE ON EDUCATION AND LABOR FROM THE SUBCOMMITTEE ON WARTIME HEALTH AND EDUCATION

We have the honor to submit herewith the third interim report of the Subcommittee on Wartime Health and Education.

THE 4½ MILLION IV-F'S

The Nation has been deeply impressed by the fact that approximately 4½ million young men in the prime of life have been found unfit for military service because of physical and mental defects. In addition, more than a million men have been discharged from service because of defects other than those sustained in battle. One and one-half million men now in uniform were rendered fit for service only through medical and dental care given after they were inducted.

In all, it is estimated that at least 40 per cent of the 22,000,000 men of military age—between 8 and 9 million men—are unfit for general military duty. This is more than twice the number of men we now have overseas engaged in the great offensives that will bring total victory.

The 4½ million men in class IV-F are those who remained unfit for military service after all doubtful cases had been reexamined in terms of the latest revision of Army and Navy physical and mental standards, after induction of those acceptable for rehabilitation in the Army and Navy, and after reclassification of all who by self-rehabilitation or other circumstances had become eligible for military duty. It should be emphasized that these 4½ million men are all rejectable under the lowest possible physical and mental standards, as defined by a special commission of physicians appointed by the President.

Interpretation of the Selective Service rejection data as an index of national health was challenged at the subcommittee's hearings by representatives of the American Medical Association. They pointed out that the standards of physical fitness demanded for military service are considerably higher than those required for normal civilian activity.

While it is true that many people are afflicted with defects that do not prevent participation in ordinary activities, such defects often reduce initiative and working capacity, and, if neglected, may eventually result in serious illness or disability. Minor defects of this kind may not appreciably affect mortality and morbidity rates, or life expectancy tables. They may offer little of interest to physicians engrossed with more spectacular ills. But the patient with a toothache, or with impaired hearing, is well aware of the distress and limitations imposed upon him by his infirmity. In the aggregate, minor defects constitute a serious drain on our manpower.

Regardless of how the Selective Service data are interpreted, the widespread existence of illness and defects among our population has been demonstrated by numerous extensive surveys conducted under both governmental and private auspices. The findings of some of these surveys, which also have shown that many of these diseases and defects are preventable or remediable with proper medical care, will be cited later in this report.

MEANING OF THE FIGURES

It would be wrong to conclude from the Selective Service rejection figures that we are a nation of weaklings. Our enemies labored under that delusion, and they are learning their error the hard way. On the other hand, it is evident that we have no reason to be smug or complacent about the state of our people's health. We must ask, "What do these figures mean?" and then, "What must we do about it?"

It is clear that the figures do not reflect discredit on the men themselves. The great majority of them are the victims, not the villains, of the situation. Nor do the figures mean that the rejectees are unfit for participation in the war effort; in most cases they are serving honorably in war production or in some other necessary civilian activity.

The large number of rejections does mean that the manpower problems of the Army and Navy have been much more serious than they would have been had the Nation's health been better. The unavailability of the rejected men means that it was necessary to call into military service hundreds of thousands of other men better fitted for essential civilian tasks and more deeply committed to responsibilities in the society we fight to preserve—men with families, trained mechanics, skilled technicians, and teachers in scientific and technical schools.

If this situation was preventable—and we are profoundly convinced that it was—this Nation has an immediate duty to seek an immediate remedy.

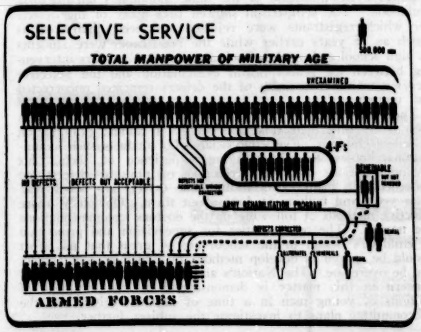
REHABILITATION OF REJECTEES

According to officials of the Selective Service System, at least one-sixth of the defects for which men were rejected could be remedied with relative ease, as far as medical science is concerned.

Early in the war, test rehabilitation programs were undertaken by the Selective Service System, but they yielded meager results and were abandoned. In sharp contrast to the results of the Selective Service efforts are those of the Army rehabilitation program. Here remarkable success has been achieved. Approximately 1½ million men with major defects have been inducted and rendered fit for duty, including 1,000,000 men with major dental defects, more than 250,000 with impaired vision, 100,000 with syphilis, and more than 7,000 with serious hernia. The success of this program demonstrates what can be done by vigorous and coordinated effort.

The magnitude of the Army's total dental program is apparent from the following figures: During 1942 and 1943, more than 14½ million cases[1] were treated, 31,000,000 fillings were provided, 6,000,000 teeth were replaced, and nearly 1½ million bridges and dentures were supplied. This work required 53,000,000 sittings by patients, and the production of three and one-half times the normal quantity of dental supplies and equipment produced in the United States in any one year.

We are told that registrants will continue to be called into service even after VE-day. Since the only physically fit men



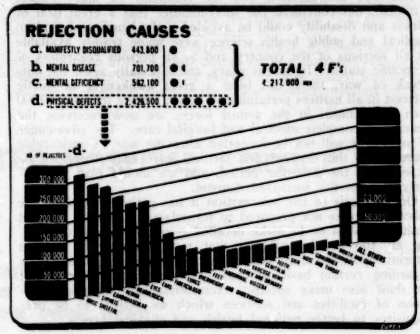
available will be the newly registered 18-year-olds, men with dependents, and those in essential occupations, wisdom and fairness demand that as many as possible of the registrants now in the IV-F classification be made fit for service. The subcommittee therefore recommends that the Army continue and, if feasible, expand its rehabilitation program.

Another opportunity for better rehabilitation service is presented by the Barden-La Follette Act (Public Law 113, 78th Cong.). This act recently made Federal funds available to State rehabilitation agencies for medical correction of defects hindering employment. Some IV-F's have already been referred by selective-service boards to State vocational rehabilitation agencies and have had their defects corrected. The immediate possibilities of this mechanism are somewhat limited because initiative is in the hands of the individual States, many of which have not yet developed the medical phase of their rehabilitation programs. Nevertheless, if the opportunities offered by the Barden-La Follette Act program were more widely known and utilized, more substantial progress could be made in the rehabilitation of rejected men.

HEALTH OF THE REST OF THE POPULATION

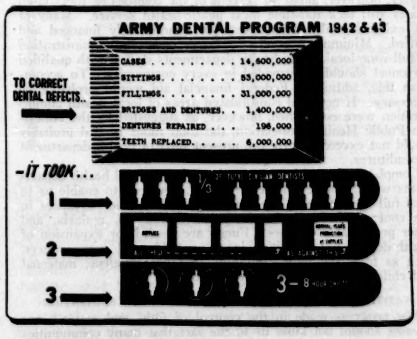
According to the National Health Survey, conducted by the United States Public Health Service in 1935, more than 23,000,000 people in the country had a chronic disease or a physical impairment. In the working-age group (15-64), more than 3,000,000 people had impairments such as deafness, blindness, or orthopedic handicaps, and more than a million were estimated to have hernia.

A Farm Security Administration study of 11,495 individuals in 2,480 farm families residing in 21 typical rural counties in 17 States in 1940 showed that 96 percent of those examined had significant physical defects. The average number of defects per person was 3½. Only 1 person out of each 100 examined was found to be "in prime physical condition."



Among nearly 150,000 young people examined by physicians for the National Youth Administration in 1941, 85 per cent needed dental care, 20 percent needed eye refractions, 19 percent needed tonsillectomies, and 12 percent needed special diets. Approximately 1 youth in every 7 was in urgent need of some kind of medical or dental treatment. About one-third of the young people had health defects which limited their employability. Only 10 out of each 100 examined had no defects for which the examiner made a recommendation.

High defect rates are not limited to low-income groups such as those studied by the Farm Security Administration and the National Youth Administration. The Life Extension Institute, in examinations of 300,000 insurance policyholders selected indiscriminately with regard to sex, age, and occupation, found that 59 percent were so physically impaired as to need the services of a physician at the time of examination.


ARMY DENTAL PROGRAM 1942 & 43
TO CORRECT DENTAL DEFECTS...
CASES 14,600,000
SITTINGS. 53,000,000
FILLINGS. 31,000,000
BRIDGES AND DENTURES. . 1,400,000
DENTURES REPAIRED . . . 198,000
TEETH REPLACED. 6,000,000
-IT TOOK...
1
2
3

Industrial casualties take a heavy toll. From Pearl Harbor to January 1, 1944, 37,600 American workers were killed on the job—7,500 more than the military dead for the same period. More than 200,000 workers were permanently disabled and 4½ million were temporarily disabled.

EFFECT OF ILLNESS ON WAR PRODUCTION

The profound influence of illness and disability on war production is illustrated by figures on work absences due to sickness and accidents. In 1943, the average male industrial worker

1. The word "cases" as used here does not refer to individuals: an individual may have been recorded more than once as a "case" for separate treatments at the same or different Army posts.

lost 11.4 days and the average female industrial worker 13.3 days of work due to sickness and injury. By far the greater proportion of this loss—80 percent in the case of men and 90 percent in the case of women—was believed to be due to common ailments. Application of these figures to the number of employed male and female workers in the United States today indicates a loss of more than 600,000,000 mandays annually. This is about 47 times the amount of time lost through strikes and lockouts of all kinds during 1943.

Intensive investigation and the testimony of many expert witnesses has convinced the subcommittee that a great deal of illness and disability could be avoided if the benefits of modern medical and public health science were made readily available in all sections of the country and to all persons regardless of economic status. In recent years, and especially since the outbreak of war, there has been a great awakening of public interest in all matters pertaining to health. More than 10,000,000 men and women in the armed forces are now receiving the benefits of complete medical and hospital care. The advantages of such care will not be forgotten after the war. Considerable increase in the demand for medical care may therefore be expected in the post-war period, and we should plan immediately to meet this increased demand.

On the basis of the information it has gathered to date, the subcommittee is not prepared to formulate a complete national health program or to make detailed recommendations concerning all the health problems that remain unsolved. In this interim report, however, we shall make preliminary observations regarding certain basic subjects which require further study; we shall also make specific recommendations regarding provision of facilities and services which we believe to be prerequisites to better national health and physical fitness.

NEED FOR IMPROVED PREVENTIVE SERVICES AND FACILITIES

During the period 1900-1940, the death rate in the United States fell from 17.2 per 1,000 population to 10.8 per 1,000, a reduction of nearly 60 per cent. Improvement has been most notable with respect to diseases which respond favorably to better sanitation and immunization procedures. The death rate from typhoid and paratyphoid fever for example, was reduced by 97 percent, from diarrhea and enteritis by 92 percent, and from diphtheria by 97 percent.

A major share of the credit for this remarkable progress belongs to the public health agencies of Federal, State, and local governments. The development of the preventive services furnished by these agencies, however, has been very uneven in different sections of the country. As recently as 1935, only 615 of the 3,070 counties in the United States had full-time local public-health agencies. By 1942, under the stimulus of Federal grants made available by the Social Security Act, the number of counties served by such agencies had approximately tripled. Today, however, about 40 percent of the counties of the United States still lack full-time local public-health service. Many of the existing health departments are inadequately financed and staffed. Minimum preventive services under the administration of full-time local public health departments staffed with qualified personnel should be provided in every community. To accomplish this, additional Federal financial aid would probably be necessary. If new and consolidated areas of local health administration were established, however, as suggested by the American Public Health Association, the total funds needed probably would not exceed greatly the present total of health department expenditures.

Complete geographic coverage by full-time local health departments would not be sufficient in itself, however, to enable us to take full advantage of the possibilities for further advances in the control of venereal infections, tuberculosis, malaria, and other preventable diseases. Funds are needed for expansion of health-department activities in these fields and many others, such as food and milk sanitation, industrial hygiene, maternal and child health, and health education.

WATER SUPPLIES, SEWERAGE AND RURAL SANITATION

The progress made in the control of filth- and water-borne diseases should not blind us to the fact that many communities lack adequate sanitary installations and that rural sanitation in many parts of the country is at a deplorably low level. According to the United States Public Health Service, nearly 5,000 communities need new water systems and approximately 6,500 need water extensions or improvements. New sewerage systems are needed in about 7,700 communities with a combined population of nearly 9,000,000. More than 10,000,000 additional people live in communities where sewer extensions are needed. There are more than 2,800 incorporated communities, with a total population exceeding 25,000,000, that do not have any form of sewage treatment. Approximately 5,250,000 rural homes need new or improved water supplies, and 5,000,000 need sanitary privies. More than 846,000 rural homes are without any toilet facilities whatsoever.

The importance of milk as a vehicle for transmission of disease is universally recognized. Although pasteurization can and does prevent the transmission of milk-borne disease, most of the milk used in smaller communities is still consumed raw. Pasteurization plants should be constructed in more than 400 small communities with an aggregate population of about 1,666,000.

In many instances, community facilities such as those mentioned above could be financed on a self-liquidating basis by local governments with the aid of technical assistance and long-term, low-interest loans from State and Federal Governments. In other cases, grants-in-aid would be needed to supplement local resources. Such loans and grants would pay high returns in better health for all the people and in civic improvement throughout the Nation. Moreover, the required projects would give substantial stimulus to industry and would help provide full employment after the war.

IMPORTANCE OF CHILD HEALTH

Most of the witnesses who testified before the subcommittee emphasized the necessity of correcting physical defects early in the life of the child. The importance of this is illustrated clearly by a study conducted by the United States Public Health Service in Hagerstown, Md. The health of the school children in Hagerstown has been observed over a period of years, and careful records of the findings have been kept. Recently, the Selective Service medical records of the Hagerstown registrants were compared with the school health records obtained by examination of the same individuals during their childhood. The comparison showed that many of the defects for which registrants were rejected had been discovered as much as 15 years earlier while the registrants were students in high school and grade school, and that in the years intervening between the school health examination and the Selective Service examination many of the defects remained uncorrected and unimproved.

The Hagerstown story is a familiar one to many physicians who freely give their time and energy in annual examination of school children. Every physician who conducts such examinations knows the discouraging experience of seeing his recommendations for the correction of physical defects go unheeded. In many children the same defects are noted year after year, and nothing is done about them. Obviously, more effective methods of following up the doctors' recommendations are needed. The opportunities for supervision and promotion of children's health in the school are so great that no effort should be spared to develop methods by which present neglect can be overcome. The Nation's and the Government's rightful concern in this matter is demonstrated by the unfitness of millions of young men in a time of national crisis, and the subcommittee plans to investigate the subject further.

MENTAL HYGIENE

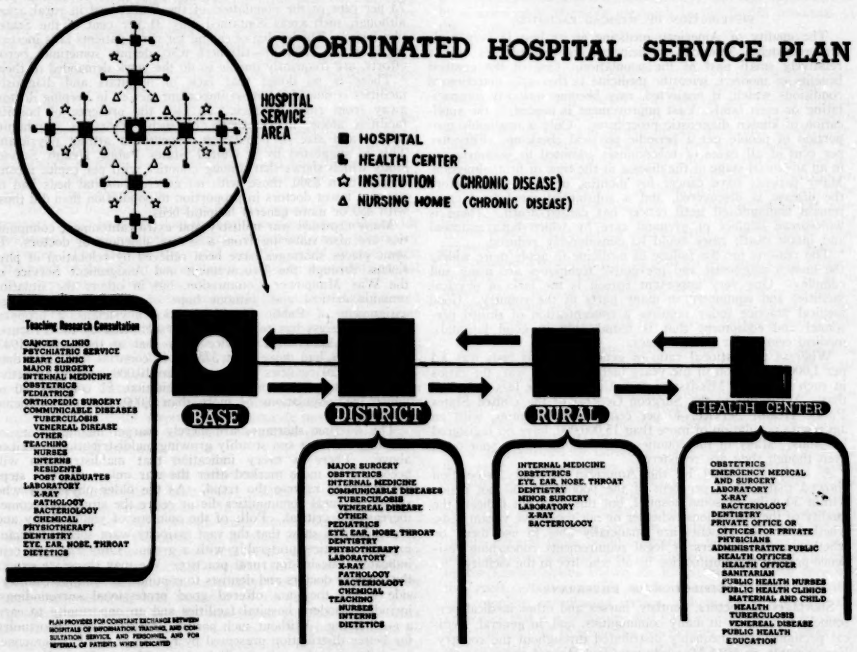
The high rejection and discharge rates for so-called neuropsychiatric causes have focused Nation-wide attention on the prevalence of mental disorders and maladjustments. This subject will be dealt with in a separate report on the health needs of veterans. We wish to emphasize here only the following points.

There is no cause for special alarm at this time about the number of neuropsychiatric discharges. A high rate of rejection and discharge for neuropsychiatric causes could have been predicted. It has long been known that approximately two-thirds of the illness encountered in general medical practice is essentially neuropsychiatric in origin and that half of the patients in hospitals at any one time are there because of serious mental disorders. Indeed, one may safely predict that in any group of 15-year-olds 1 out of 22 will some day be committed to a mental institution. It is not surprising, therefore, that the Army and Navy have had to reject and discharge large numbers of men as unfit to cope with the unusual stresses and strains of military life.

The neuropsychiatric causes for rejection and discharge include various degrees of nervousness, emotional instability, personality disorders, and inadequacies. The great majority of men with these difficulties can adjust themselves satisfactorily to civilian life in the home, on the job, and in the community. As indicated by a recent study of the New York Committee on Mental Hygiene, however, many of the men will need professional psychiatric services to help them make the adjustment. At present, psychiatric clinics are altogether inadequate to meet the needs of the returning men, and considerable expansion of such clinical services should be undertaken, primarily as a preventive measure to guard against the aggrava-

tion of disorders which are now relatively minor. The acute shortage of trained psychiatric personnel makes it imperative that such expansion be accomplished within the framework of general community medical services rather than as a separate program for care of veterans. There are only 3,000 qualified psychiatrists in the country—too few to permit separate mental hygiene services for different segments of the population. Medical schools could help by arranging their curricula so that the general medical practitioner, who must see most of the patients with psychoneuroses, would have a better knowledge of psychiatric problems and techniques.

From a longer range point of view, the establishment of child-guidance clinics in all communities is urgently needed to prevent early social maladjustments. Such a step would pay tremendous dividends in decreased crime, delinquency and costs of institutionalizing the mentally ill.



Finally, attention must be drawn to a factor which is beyond the control of medical science. Many expert witnesses emphasize that full employment and adequate social security are indispensable to a truly effective health program. This is especially so in regard to mental health. There is nothing so detrimental to a person's morale and self-confidence as idleness and the feeling that he has no useful place in the scheme of things. It may be too much to say that idleness causes mental or physical disease, but it provides fertile ground for development of fears, anxieties, and a sense of insecurity. These factors are known to have a profound effect on man's resistance to disease.

MEDICAL EDUCATION

Certainly, from the point of view of future needs, there should be no reduction in the present output of trained medical personnel. According to the American Medical Association, curtailment of this output is threatened by current Selective Service policies. Because of the urgent need of the armed forces for young men, the Selective Service System has deemed it impractical to continue occupational deferment of premedical and predental students. For the same reason, the Army Specialized Training Program for premedical and predental students has been drastically curtailed. The American Medical Association estimates that enrollment of medical students may fall as much as 50 per cent beginning in 1945. If this proves to be the case, there would be only 2,500 medical graduates in 1948, about half the usual number and considerably less than the number of physicians who die annually. All expert opinion, however, is not so pessimistic. The chairman of the executive council of the Association of American Medical Colleges has informed the subcommittee that medical-school administrators are not alarmed about the situation, that classes are full for 1944, and that little apprehension is felt concerning the 1945 class. Further study of the facts is apparently necessary.

If there is actually a threatened shortage, it would seem that there must be in the United States the few thousand persons of the age, caliber and training needed to raise annual premedical and medical school enrollments to the number required for the duration of the war emergency. It is true that an effort would have to be made to find students. Many war veterans and young men rejected for military service because of physical defects do not know of the great need for doctors or of the opportunities present in the study of medicine. Moreover, certain barriers and prejudices which limit enrollments could be removed. The financial barriers which face many prospective students could be overcome by more adequate scholarships or by loan funds. Some qualified students cannot gain admission to medical schools because of tacit racial or religious discrimination. Lastly, there is a great untapped source of future doctors among the women of the Nation. We are unable to discover any compelling reason for the failure of this country to utilize its womanpower to prevent what is claimed to be a serious future shortage of physicians. Other nations have done so; we have simply never tried.

TRAINING FOR DEMOBILIZED PHYSICIANS

The quality of medical education in this country for the past two decades has been very high. The medical schools have rendered outstanding service in the war by increasing the annual output of physicians 30 per cent despite serious depletion of

faculties and unpredictable Army and Navy policies. But the accelerated undergraduate courses, and the shortened internships and residencies, will make it necessary to provide further supervised training for many recent graduates unless the future quality of medical and dental practice is to be jeopardized. Most of the young graduates are well aware of this. A majority of the replies to a questionnaire recently addressed to medical officers of the Army and Navy indicated a desire for refresher and advanced courses in medicine after the war. Many thousands of physician veterans will receive post-graduate training at Government expense under the terms of the G. I. bill of rights. Neither the need nor the demand for post-war advanced medical training can be met with the graduate teaching facilities and staffs now available in medical schools. Expansion of such facilities through increased provision of teaching hospitals and medical centers, as part of the program hereinafter described and recommended, will therefore be required.

DISTRIBUTION OF MEDICAL FACILITIES

The quality of American medicine at its best is very high. Unfortunately, American medicine at its best reaches only a relatively small part of the population. One of the greatest benefits of modern, scientific medicine is the early detection of conditions which, if neglected, may become seriously incapacitating or even fatal. Vast improvement is needed in the application of known diagnostic procedures. Only a negligible proportion of people get a periodic physical check-up. Fifty-five per cent of all cases of tuberculosis admitted to sanatoria are in an advanced stage of the disease at the time of first admission. Many patients have cancer for months, or even years, before the disease is discovered, and a substantial number of cases remain undiagnosed until cancer has caused death. There is widespread neglect of prenatal care by which both maternal and infant death rates could be considerably reduced.

The reasons for the failure of medicine to apply more widely the known diagnostic and preventive techniques are many and complex. One very important reason is the lack of physical facilities and equipment in many parts of the country. Good medical practice today requires a concentration of skilled personnel and equipment that is found only in good hospitals, medical centers, or group clinics.

Whereas the national ratio of general hospital beds was 3.4 per 1,000 population in the years just before the war, the ratios in such States as Mississippi and Alabama were less than half that. According to the Surgeon General of the United States Public Health Service, 40 per cent of our counties, with an aggregate population of more than 15,000,000, have no registered hospitals. Many of the counties with hospitals have poor ones, even though they are registered.

A study conducted by the American Medical Association showed that only 2 per cent of the population did not reside within 30 miles of some hospital, but this does not indicate the quality of the institutions, whether or not they have vacant beds, whether or not patients are financially able to use them, or whether racial barriers or legal requirements concerning residence prevent their utilization by all who live in the vicinity.

DISTRIBUTION OF PHYSICIANS

Shortages of doctors, dentists, nurses and other medical personnel are marked in many communities, and, in general, medical personnel are inequably distributed throughout the country. For example, in 1944 Massachusetts had about 3 times as many active physicians in proportion to population as did South Carolina. Similar disproportions exist between other States and between local areas within the same State. Counties with more than 5,000 population may be without a single physician, while other counties in the same State may have 1 active physician for each 1,000 people.

Extensive studies conducted by the United States Public Health Service show that the distribution of physicians is influenced by several interrelated factors, among which are community purchasing power, adequacy of hospital facilities, degree of urbanization, proximity to medical schools and teaching hospitals, and presence of professional colleagues. Of these factors, the first three are probably the most significant, and community wealth is probably the most important of all. In 1938, counties with a per capita income of more than $600 had 8 times as great a proportion of physicians to population as did counties with a per capita income of less than $100.

Rural areas are generally less well supplied with physicians than urban areas. Strictly rural counties in 1938 had only about one-third as many physicians in proportion to population as did urban counties. Recent data supplied by the Procurement and Assignment Service show that the 81 counties reported to have no active physician, as well as the 141 counties reported to have more than 5,000 inhabitants per active physician, were practically all rural. The wealthier rural areas are better supplied than are the poorer rural areas, but even the wealthiest group of rural counties in 1938 had 30 per cent fewer physicians in proportion to population than urban areas with the same per capita income.

The shortage of physicians in rural communities is not due to less need for medical care than in cities. Studies made by the Farm Security Administration suggest that the burden of illness in rural areas is the same as, or greater than, in urban centers.

SITUATION GROWS STEADILY WORSE IN RURAL AREAS

Despite this need, medical graduates have shown increasing reluctance in recent decades to settle in rural communities. In North Carolina, for example, the number of doctors in strictly rural areas fell from 1,125 in 1914, to 719 in 1940. In that year 73 per cent of the population of the State lived in rural areas, although such areas contained only 31 per cent of the State's physicians. The burden of caring for rural patients falls increasingly on the older practitioners who, despite sometimes heroic efforts, are frequently unable to do the work demanded of them.

There is no doubt that lack of hospitals and diagnostic facilities is one of the most important factors in keeping doctors away from rural practice. In fact, the presence of hospital facilities alone, independently of such factors as community wealth and size of population, appears to attract physicians. This is suggested by a United States Public Health Service study which shows that among counties with per capita income of less than $300, those with no general hospital beds had 60 per cent fewer doctors in proportion to population than did those with 250 or more general hospital beds.

Many crowded war-industry and extra-cantonment communities are also suffering from a severe shortage of doctors. In some places shortages have been relieved by relocation of physicians through the Procurement and Assignment Service of the War Manpower Commission, but in others the situation remains critical and without hope of relief except through assignment of Public Health Service physicians, a proposal which Congress has rejected. Data submitted by the Procurement and Assignment Service show that at the end of 1943, 553 counties had more than 3,000, 141 counties had more than 5,000, and 20 counties had more than 10,000 people per active physician in private practice. In addition, 81 counties, 30 of which had populations of more than 3,000, had no practicing physician.

The wartime shortages are merely sharper manifestations of the long-standing and steadily growing maldistribution described above. There is every indication that maldistribution will become even more marked after the war unless effective steps are taken to reverse the trend. As the older physicians who remain in rural communities die or retire the situation becomes increasingly critical. Polls of the opinions of young Army and Navy doctors show that the vast majority want specialist training and practice, preferably with a group. Only 12½ per cent indicated a desire for rural practice. We may therefore expect the younger doctors and dentists to continue to shun the countryside unless they are offered good professional surroundings, including modern hospital facilities and an opportunity to earn a good living. Without such positive incentives the opportunity for better distribution presented by release of medical personnel from the armed services will be lost. More uniform licensure laws are also needed.

THE MEDICAL CENTER IDEA

Hospitals were formerly considered only as places in which to care for the seriously ill, and even today many hospitals are nothing more than that. Modern programs of hospital construction should have as their aim the ample provision of a more inclusive type of hospital service. The subcommittee has studied with interest the growing trend toward utilization of a relatively new type of facility called a medical center, which combines and coordinates the three major aspects of modern medical care—the preventive, the diagnostic and the therapeutic services. The medical center brings together doctors' offices, diagnostic and laboratory equipment, hospital beds, and preventive work. It furthers group practice by physicians, surgeons and dentists; encourages experimentation and research, and stimulates dissemination and exchange of medical knowledge.

This principle of combining the preventive, diagnostic and curative services of medicine into a single functional unit, here called the medical center, has been advantageously applied on a large scale in certain great university centers. It is also applicable, however, to the smaller-scale needs of rural com-

munities throughout the Nation. The establishment of a network of "outpost clinics," to use the phrase of a representative of the American Medical Association, the creation of "diagnostic centers," as urged by the Surgeon General of the Navy, and the "expansion of the present functions of the hospital," advocated by the spokesman of the American Hospital Association, appear to be expressions of the same basic aim—the provision of facilities suited to the practice of modern, scientific medicine.

PLANNED NETWORK OF FACILITIES URGED

Terminology in this field is far from uniform. The Surgeon General of the United States Public Health Service urged development of a coordinated network of four basic types of medical center facilities—the small neighborhood or community "health center," the "rural hospital," the "district hospital," and the large "base hospital." (See cut on p. 39).

The physical structures required for many of these four basic types of units already exist in many areas. Here the primary need is for regional planning and organization of the existing facilities so that they might function in a coordinated manner, rather than for the construction of new buildings. In some places, minor alterations, renovations, or addition of new wings, might suffice to convert existing public or voluntary institutions into units of the coordinated regional plan.

The smallest unit, the health center, might include offices for local physicians and dentists; facilities for emergency medical and surgical work; a small number of beds for obstetrical care; laboratory facilities for X-ray, blood, and bacteriological procedures; and health department offices and clinics where these are not otherwise provided.

The rural hospital, located within easy reach of several health centers, would be larger than the health center and would provide additional basic medical, surgical, obstetrical, and laboratory services. The size of the rural hospital would depend upon the needs of the area it served, but it should be a modern hospital in every sense of the word.

Many of the health centers and rural hospitals probably would serve areas which could not support specialists' services of their own. Therefore, such services would be provided through district hospitals, located so that they could conveniently serve several rural hospitals. Local needs and preferences might determine whether patients from the rural areas were transported to the district hospitals or whether the specialists from these hospitals visited the smaller units periodically. In most instances the district hospitals would provide nurse training and instruction for interns, including discussion of complex cases and of medical advances.

BASE HOSPITALS

Finally, as the hub of each major medical service area, there would be a large base hospital. In most cases the major service area would be a State, though some States might have more than one major service area, and in some instances a base hospital might serve two States or sections of two States. The base hospital would be a teaching hospital, staffed with experts in every medical and surgical specialty, equipped for complete diagnostic services, and designed to conduct extensive postgraduate work and research. Besides its general hospital beds, it would have, either on its premises or nearby, facilities for institutional care and study of tuberculosis, nervous and mental disease, contagious disease, and orthopedic and chronic disease. The benefits of the research carried on in the base hospital would be passed on to the smaller units in the network, and there would be constant back-and-forth referral of patients and diagnostic information, as well as interchange of personnel, between the large center and the smaller institutions.

With such graded networks—the health center, the rural hospital, the district hospital, and the base hospital—covering the entire country, facilities would be available through which every person, regardless of where he lived, might receive (*a*) immediate diagnosis and care for the common, relatively simple ailments and (*b*) easy access when necessary to the more complicated types of medical service.

The development of such a network of medical centers would constitute a great step toward the goal of providing a high quality of medical service everywhere in the Nation. It would enable communities to cope much more adequately with the medical needs of war veterans and their families. It would also create opportunities for group and individual practice for the 40,000 medical and dental officers who will return from the armed forces, as well as for returning nurses and other health personnel.

HEALTH DEPARTMENT CENTERS

Local health departments should be moved from the musty basements of county courthouses and city halls to modern, well-equipped buildings where the health officer and his staff could efficiently carry on their very important activities.

The American Public Health Association has proposed the creation of approximately 1,200 public health districts of roughly 50,000 population each, with at least one district health center and one subcenter in each district. These health department centers could in many instances be included in the medical center type of facility described above.

With improved facilities the health departments could undertake expanded public health programs designed to eradicate venereal disease, tuberculosis, malaria, and hookworm; to lower maternal and infant mortality; and to promote health through education. Cooperation would be fostered between the health department and local private practitioners, and both would benefit by a more comprehensive approach to the health problems of the people.

ACHIEVING A HEALTH FACILITIES PROGRAM

According to careful estimates made by the United States Public Health Service, facilities are needed for 100,000 new general hospital beds, 94,000 new nervous and mental hospital beds, and 44,000 tuberculosis beds. In addition, 66,000 general beds, 97,000 nervous and mental disease beds, and 16,000 tuberculosis beds are situated in hospitals that are obsolete and that should be replaced. Approximately 2,400 modern structures are needed to serve as headquarters for local health departments.

A program for construction of these facilities would have to be well-planned and well-coordinated, in order to avoid the mistakes which characterized the construction boom following World War I. Areas which need hospitals most should be given priorities for building materials and surplus medical supplies. The hospitals should not only be planned and built along modern, functional lines, but should be staffed and maintained so as to assure a high level of operating efficiency. Voluntary and public hospitals should work together in a coordinated manner. Both, in turn, should cooperate with the health department and private practitioners.

The cost of an adequate health-facilities program cannot be borne by the States and localities alone. Federal grants-in-aid to the States on a basis of need will be necessary.

In order to permit local initiative and control, State programs should be drawn up by State health planning commissions in cooperation with local authorities. Such commissions, consisting of representatives of professional groups and the public, could be appointed by Governors in States where they do not now exist. In drawing up State plans the commissions should consider the needs of all sections of the State, should include in the plan all suitable existing public and voluntary hospitals, and should plot the new construction as well as the expansion or replacement of existing facilities needed for adequate service. Before Federal funds could be granted, however, over-all State plans and individual projects should be reviewed and approved by the United States Public Health Service to make sure that they meet certain minimum standards of construction, operation, and complete, coordinated service. There should be reasonable assurance that a new facility will have enough patients to justify its existence. In communities where sufficient income from fees of individual patients does not otherwise appear probable, provision for group prepayment plans or tax-supported services, or both, should be required.

Grants to both public and voluntary institutions included in the plan would be administered through a State agency, in most cases the State health department. To insure continued representation of the public, health advisory councils should be appointed to confer with the State agency administering the plan.

PAYMENT FOR MEDICAL CARE

Much has been said and written about the financial barriers to good medical care. There is general agreement that good medical care is necessarily expensive; that the burden of illness is unpredictable and falls unevenly, striking one family much harder than another; that sickness comes unexpectedly and may wipe out the laboriously acquired savings of an entire family; and that for these reasons a considerable part of the population does not receive either the amount or the quality of medical care it needs and should have.

In 1942 there were approximately 33.4 million family units in the United States. The following table shows their income distribution and the amounts they spent for medical care; also shown are the income distribution and the amounts spent for

medical care by the 41.2 million "spending units," including individual consumers as well as family units.

The table indicates that even in the relatively prosperous year of 1942, 70 percent of the families in the United States had incomes of $3,000 or less. The average family expenditure for medical care was estimated at $100, but families with incomes under $3,000 spent considerably less than this. Nevertheless, the low-income families spent a larger proportion of their income for medical care than the higher-income families.

CARE RECEIVED VARIES WITH INCOME

Other studies, particularly those of the Committee on the Costs of Medical Care, show that low-income families not only spend less for medical care but also receive much less care than those with higher incomes. The highest income group in 1929 received more than twice as much physician's care and more than three times as much dental care as did the lowest income group. Yet it is the low-income group that needs the most medical care. Sickness and poverty go together. In 1935 wage earners in families with incomes under $1,000 per year suffered about twice as many days of disabling illness as did workers in families with incomes over $3,000, according to the National Health Survey. Facts do not support the observation that "the poor and the rich receive the best of medical care; only the middle class suffers." High-quality care on a charity or low-cost basis is available to the poor in relatively few places. Even in those places, low-income families are often reluctant to accept charity.

Income and medical care expenditures of 33½ million families and of 41 million spending units, 1942*

Aggregate Money Income During 1942	Approximate Number of Families in Each Income Group	Approximate Number of Spending Units † in Each Income Group	Percentage of Total Families	Percentage of Total Spending Units	Average Amount Spent for Medical Care ‡		Proportion of Total Income Spent for Medical Care	
					Families	Spending Units	Families, per Cent	Spending Units, per Cent
Less than $1,000	6,900,000	10,100,000	21	24	$42	$35	6.8	5.7
$1,000-$2,000	9,800,000	12,000,000	29	31	68	62	4.5	4.2
$2,000-$3,000	6,800,000	7,900,000	20	19	96	94	3.9	3.9
$3,000-$5,000	6,700,000	7,300,000	20	18	143	141	3.7	3.7
More than $5,000	3,300,000	3,300,000	10	8	241	241	2.4	2.4
Total	33,400,000	41,200,000	100	100	$100	$80	3.6	5.0

* Based on data from "Civilian Spending and Saving 1941 and 1942," Division of Research, Consumer Income and Demand Branch, Office of Price Administration (March 1, 1943).
† The term "spending unit" includes individual consumers as well as families.
‡ Includes dental and nursing service.

In 1933 the Committee on the Costs of Medical Care estimated that adequate medical and dental care, with proper remuneration for those furnishing the service, could be provided at an average annual cost of about $125 per family. Since this estimate was made, prices of medical goods and services have risen so that the figure would probably be about $150 if it were brought up to date. Other authorities, however, place the average cost of providing adequate services at a much higher figure. It is evident from studies of family budgets that the 50 percent of our families with incomes under $2,000 cannot afford to pay even $150 a year for medical care and that this amount imposes hardship upon many families in the $2,000 to $3,000 income group. The result is that doctors' bills pile up and many people will not call a doctor until they are seriously ill.

FEE-FOR-SERVICE VERSUS INSURANCE

Evidence such as this leads the subcommittee to conclude that the "pay-as-you-go" or fee-for-service system, which is now the predominant method of payment for medical services, is not well suited to the needs of most people or to the widest possible distribution of high-quality medical care. It tends to keep people away from the doctor until illness has reached a stage where treatment is likely to be prolonged and medical bills large. It deters patients from seeking services which are sometimes essential, such as specialist care, laboratory and X-ray examinations, and hospitalization. Individuals with low incomes, whose need is greatest, are most likely to postpone or forego diagnosis and treatment.

The solution of this problem will not be easy. Undoubtedly it lies in some form of group financing which would make it possible to share the risks and distribute the costs more evenly. This might be achieved by voluntary or compulsory health insurance, by use of general tax funds, or by a combination of these methods. Insurance methods alone would not be enough, because they are not applicable to the unemployed or to those in the lowest income groups.

In order to meet the requirements of the public and of the professional groups concerned, any method which is evolved should offer complete medical care, should be reasonable but not "cut rate" in cost, should include substantially all of the people, should afford the highest quality of care, should permit free choice of physician or group of physicians, should allow democratic participation in policy making by consumers and producers of the service, should be adaptable to local conditions and needs, and should provide for continuous experimentation and improvement. Insofar as possible, it should also avoid the charity relationship.

VOLUNTARY VERSUS COMPULSORY INSURANCE

The way in which these aims can best be achieved is now the subject of considerable debate. Advocates of voluntary health insurance, such as the Blue Cross hospitalization and the medical society prepayment plans, hold that such plans will fulfill all needs if given sufficient time, and if supplemented by tax-supported grants for medical care to all recipients of public assistance. Others believe that only a small percentage of the population will ever obtain complete medical care through voluntary prepayment plans, and propose compulsory health insurance along some such lines as those set forth in the Wagner-Murray-Dingell bill (S. 1161, 78th Cong.). Still others maintain that needs would be met most satisfactorily and economically through a universal system of tax-supported medicine. At this stage of its investigation, the subcommittee is not prepared to pass judgment on these differing opinions. It is in agreement, however, with those who feel that remediable action is overdue and should not be long delayed.

Pending the achievement of a solution which will assure complete medical, dental, and hospital care for the whole population, more adequate provision should be made for medical care of the needy. This will require increased appropriations by local, State, and Federal governments. Under the Social Security Act, Federal funds are granted to State programs for aid to the needy aged, the needy blind, and needy dependent children. Federal funds can be used for medical care of individuals in these categories if the State law so provides, but in most States medical care is not included among public-assistance benefits. Furthermore, Federal funds are not available to State programs for aid to needy individuals other than the aged, the blind, and dependent children. Legislation introduced in the 78th Congress provided for amendment of the Social Security Act so that Federal and State funds would be available to help States finance medical care for the needy, regardless of category. Proposals have also been made to alter allotment procedures governing distribution of Federal funds to State public-assistance programs so that more money could be given to States where needs are greatest. These measures, if approved, would help relieve the financial load on hospitals and practitioners, who now give a great deal of free care. Such relief for hospitals and physicians would permit them to lower their charges to prepayment plans and thus encourage the enrollment of more people from the group able to bear the average cost of medical care.

MEDICAL RESEARCH

Magnificent progress has been made in medical research during the war. The curative powers of penicillin and of the sulfa drugs, the life-saving value of blood plasma and serum albumin, the efficacy of D. D. T. powder and typhus vaccine, and the

development of new malaria-control methods are all fruits of a concentration and expansion of medical research resulting from determination to win the war. Adequate financing, coordination, and teamwork have been the keys to this success. Through governmental agencies such as the Army, Navy, and the Office of Scientific Research and Development, and nongovernmental agencies such as the National Research Council, the universities, and other groups, the Nation's resources for research have been mobilized in a vast cooperative effort.

With victory in sight, we now approach the challenges of peace. Many problems await solution. Much long-term as well as short-term or "practical" research into the causes and cures of cancer, arteriosclerosis (hardening of the arteries), hypertension (high blood pressure), dental decay, and nervous and mental disorders must be undertaken in order to assure further progress against disease.

The Office of Scientific Research and Development has served well as an emergency agency through which to channel Federal aid for medical research. Federal aid must continue if the great possibilities offered by medical research are to be realized. The way in which Federal aid is to be given and administered must now be carefully considered.

Government cannot, and must not, take the place of philantrophy and industry in the sponsorship of research. It is essential, however, for the Federal Government to provide resources for coordinated attack on medical problems which affect the country as a whole. In no other way can science be given full freedom and opportunity to serve the Nation in peace as it has in war.

EDUCATION, LEGISLATION, AND ORGANIZATION

The subcommittee recognizes the complexity of the task of providing good medical care to all the people. We believe that there are three necessary methods of approach to this task. One approach without the others would be unrealistic and ineffective.

The first involves education of the people, of the professions, and of the Government. We must collectively accept the fact of widespread existence of disease, disability, and injury, much of which medical knowledge today is able to prevent, alleviate, or cure.

The second approach is through legislation. There is urgent need for modern medical facilities in many places throughout the Nation, especially in rural areas and in crowded war-industry communities. To meet these needs money must be provided, and Federal financial assistance will be necessary.

The third approach is through better organization of medical services. There is wide agreement that improved organization would result not only in a higher quality of service but in considerable economy of time, effort, and money. The necessary reorganization can best be achieved, and the welfare of the professions and the public advanced, by regional planning such as that provided for in the health and medical center proposal set forth above.

RECOMMENDATIONS

On the basis of the preliminary findings outlined above, the subcommittee—

1. Recommends that Federal grants-in-aid to States be authorized now to assist in post-war construction of hospitals, medical centers, and health centers, in accordance with integrated State plans approved by the United States Public Health Service. (See cut on p. 39 and descriptive text).

2. Recommends that Federal loans and grants be made available to assist in post-war provision of urban sewerage and water facilities, rural sanitation and water facilities, and milk pasteurization plants, in communities or areas where such facilities are lacking or inadequate.

3. Urges State and local governments to establish full-time local public health departments in all communities as soon as the needed personnel become available. With this aim in view, consideration should be given to rearrangement and consolidation of local health jurisdictions and to amalgamation of existing full- and part-time local health departments with overlapping functions. The Federal Government should increase the amount of its grants to State health departments to the end that complete geographic coverage by full-time local health departments may be achieved and that State and local public health programs may be expanded in accordance with needs.

4. Recommends that the Army consider the feasibility and advisability of expanding its program for induction and rehabilitation of men rejected because of physical and mental defects.

5. Recommends that the medical records of the Selective Service System be preserved and that funds be appropriated for further processing and study of these records.

6. Reports the acute shortage of personnel with training in psychology and psychiatry and the need for immediate steps to increase the output of such personnel with a view to providing child-guidance and mental hygiene clinics on a far wider scale.

7. Recommends that Federal scholarships or loans be made available to assist qualified students desiring medical and dental education; urges that increased enrollment of women in medical and dental schools, and premedical and predental courses, be encouraged in every way possible.

8. Recommends that Federal funds be made available to States for medical care of all recipients of public assistance and that allotment formulas governing distribution of Federal funds to State public assistance programs be made more flexible in order to give more aid to States where needs are greatest.

The recommendations made above should be put into effect as soon as possible. We should begin planning now for the reconversion period. Further delay will postpone orderly solution of our health problems and deprive us of an effective means of aiding industry to maintain full production and employment after the war.

A comprehensive health- and medical-facilities program, planned now and undertaken as soon as materials and labor become available, would soon pay big dividends in improved national health and physical fitness. We have seen what neglect of opportunities for better health has cost us during this war. We should resolve now that never again, either in war or in peace, will the Nation be similarly handicapped.

JANUARY 2, 1945

CLAUDE PEPPER
ELBERT D. THOMAS
ROBERT M. LA FOLLETTE JR.

Washington Letter

(From a Special Correspondent)

Jan. 1, 1945.

Program for Physically Handicapped Advocated

A program which "should result in the permanent integration of the millions of physically handicapped into the normal, social and economic life of the nation" was urged by Congressman Augustine B. Kelley of Pennsylvania before the House of Representatives, when he submitted his report on resolution 230, establishing last June the committee to investigate aid to the physically handicapped. "From all comes the same complaint," he said, "no knowledge about the problem, no information among the handicapped as to what facilities are available, no plan and no program. . . . No national survey and study have ever been made with our goal in sight. We have made a beginning, but we have much more to do."

The Kelley committee report recommended that no legislative program be undertaken until further study is made to determine (1) the value of a national enumeration of physically handicapped and (2) methods of giving employment to the physically handicapped; how to remove the lag in vocational rehabilitation work; educational needs of the physically handicapped; value of suggested reforms in the Social Security Act, including incentives to work, types of disablements covered, policy of determining need and desirability of a form of national disability insurance; desirability of consolidating government agencies dealing with physically handicapped and systematic dissemination of information; aids needed by physically handicapped rural citizens; needs of an expanded program of research and public education in prevention of handicapping diseases and accidents.

Continuance of Medical Research Stressed

Continuance of medical research after the war with financial help from the federal government was advocated by Dr. R. E. Dyer of the U. S. Public Health Service in his testimony before the Pepper subcommittee investigating aid to the physically handicapped. He explained that there are two ways of doing this, either (1) under the National Academy of Science or (2) by using the existing legislation authorizing the National Advisory Health Council. "One way is as good as the other," he said.

When the Office of Scientific Research and Development goes out of existence along with other war agencies, something must

be done, he said, to carry on medical research, which has received such impetus during wartime. He explained that the Health Council is appointed by the Surgeon General of the U. S. Public Health Service. Of its fourteen scientist members, four are ex officio, representing the National Institute of Health, the Army, the Navy and the Bureau of Animal Industry of the Department of Agriculture. In appointing the other ten the Surgeon General seeks the advice of the nation's leading medical scientists. Dr. Dyer stressed the importance of giving fellowships to promising young scientists, declaring that the most important single factor in furtherance of medical research is to find and give opportunities to young men and women in science.

Promise of Jobs for All Faces the Seventy-Ninth Congress

Acknowledged to be one of the vital problems facing the President and Congress, besides full prosecution of the war, is how to fulfil the campaign promise of 60 million postwar jobs. A postwar full employment bill has been advocated to go before the 79th Congress, under which the government would guarantee the "right" of every American to a useful and remunerative job. This proposal involves the guaranty by "whatever volume of federal investment and other expenditure may be needed" in addition to private activity to "assure continuing full employment." It would require the President to send to Congress each year a "National Production and Employment Budget," with plans for balancing it. The President would estimate the number of jobs needed and the total amount of investment and spending necessary to support that many jobs. Says the Washington *Daily News* editorially "We think it would take this country far down the road toward a government planned, government managed national economy, under which government would have to exercise in peacetime stricter control over the affairs of the people—their business activities, their types of employment, their wages, than is now exercised in wartime."

Another question on which Congress may be expected to make a decision is universal military training. The War Department, in a circular recently distributed to officers, advocates strictly military universal training for purely military purposes, which is in contrast with President Roosevelt's suggestion of training with educational and social features. The War Department statement adds "There will be no place in a sound universal military training program for activities that are nonessential to the task of preparing our young men for combat."

Health Survey Proposed for National Capital

Favorable reaction from the local public and press has been accorded the health and hospital survey of the capital, proposed by the Washington Metropolitan Health Council of the Council of Social Agencies. It has been endorsed by the Board of Trade Public Health Committee. Vice Admiral Ross T. McIntire, Surgeon General of the Navy, heads a committee to handle survey details. Representative citizens are behind the project and an effort is being made to raise $15,000 to finance the survey and choose an expert to direct it. It is believed that the survey will prepare the way for intensification of health work in the capital.

District School Inspections To Be Resumed

Revelation that school medical inspections in Washington, D. C., had been lacking or were irregular in twenty-two public schools has resulted in an announcement by Dr. Joseph A. Murphey, chief of the District of Columbia School Medical Inspection staff, that full medical service will be resumed for District school children next month when vacancies on the health department staff have been filled. Superintendent of Schools Robert L. Haycock, however, has reported that Washington school children are "very healthy."

Doctors Handicapped by Gasoline Shortage

District of Columbia doctors were seriously handicapped during the critical gasoline shortage during December, which was relieved by an extra 800,000 gallon allotment for the area by the Petroleum Administration for War. The situation was considered desperate at one period.

Official Notes

THE PHILADELPHIA SESSION

Special Displays in the Scientific Exhibit on Heart Disease, Fractures and Fresh Pathologic Material

Among the features of the Scientific Exhibit at the Philadelphia session will be three special exhibits subsidized by the Board of Trustees. A comprehensive exhibit on heart disease will be shown under the direction of a special exhibit committee of which Dr. Paul D. White, Boston, is chairman. The fracture exhibit will again be presented by Dr. Kellogg Speed, Chicago, and his committee. An exhibit of fresh pathologic material will be shown with the cooperation of the Section on Pathology and Physiology together with the pathologists of Philadelphia, Dr. Frank W. Konzelmann of Atlantic City being in charge.

The sixteen sections of the Scientific Assembly will present groups of exhibits dealing with the various branches of medicine. Application blanks for space may be obtained from the section representatives to the Scientific Exhibit or from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

NBC RADIO BROADCASTS

Beginning January 6 and continuing through June 30, 1945 the American Medical Association and the National Broadcasting Company will present the twelfth consecutive season of nationwide network health broadcasts.

The title of the series for 1945 will be Doctors Look Ahead, including in the series broadcasts relating to wartime and postwar developments, with special emphasis on medical progress of the present day and what it foreshadows for the nation's health in the immediate future.

Topics will be announced weekly in THE JOURNAL and monthly in *Hygeia*. Fast moving events may, however, cause last minute substitution of topics. Local newspapers should be consulted for announcements of time and stations. The program will be broadcast each Saturday at 4 p. m. Eastern War Time (3 p. m. Central, 2 p. m. Mountain and 1 p. m. Pacific War Time). When conflicts exist with local programs, rebroadcast may be arranged at hours other than on the network schedule. The following are the topics for January:

January 6, Doctors at War.
January 13, Pneumonia.
January 20, Sulfa Drugs (Dr. Austin Smith).
January 27, Penicillin (Dr. Austin Smith).

The broadcast will be under the supervision of the Bureau of Health Education, whose director, Dr. W. W. Bauer, will summarize each program except when other speakers are announced.

Society Proceedings

COMING MEETINGS

Annual Congress on Industrial Health, Chicago, Feb. 13-15. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. Victor Johnson, 535 N. Dearborn St., Chicago, Secretary.

Annual Forum on Allergy, Pittsburgh, January 20-21. Dr. Jonathan Forman, 956 Bryden Road, Columbus, Ohio, Director.

Chicago Medical Society Annual Clinical Conference, Chicago, Feb. 27-March 1. Dr. Warren W. Furey, 30 N. Michigan Blvd., Chicago 2, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Philadelphia, January 12. Dr. Oram R. Kline, 414 Cooper St., Camden. N. J., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Indianapolis, January 17. Dr. Carl H. McCaskey, 608 Guaranty Bldg., Indianapolis, Chairman.

Society of Surgeons of New Jersey, Jersey City, January 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, N. J., Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Charlotte, N. C., January 15. Dr. Verling K. Hart, 106 W. 7th St., Charlotte, N. C., Chairman.

Western Section, American Laryngological, Rhinological and Otological Society, Los Angeles, January 27-28. Dr. Aubrey G. Rawlins, 384 Post St., San Francisco, Chairman.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Board Ordered to Restore License.—The state board of medical examiners was ordered by the superior court of San Francisco, October 17, to restore the license of Dr. Lillie L. Koerber, San Francisco, which had been revoked in 1943 (THE JOURNAL, Aug. 21, 1943, p. 1195). In compliance with the order the certificate was restored, but an appeal has been filed.

The Reginald Knight Smith Lecture.—Dr. Philip Levine, director of the biologic division of the Ortho Research Foundation, Linden, N. J., will deliver the first Reginald Knight Smith Lecture at Mount Zion Hospital, San Francisco, January 11, on "The Rh Factor and Its Clinical Significance." The annual lectureship has been inaugurated by Mount Zion Hospital in memory of the late Dr. Smith, who served as chief of its division of obstetrics from 1909 to 1937.

The War March of CME.—The Student-Faculty Association of the College of Medical Evangelists, Loma Linda and Los Angeles, has published a supplement to a recent review of seventy-five years of "health and healing" entitled "The War March of CME." The booklet contains photographs of the faculty, of students during the current war period and some illuminating sketches of a proposed postwar building project. The original March of CME, published in 1941, illustrates by pen and picture the history of the school, stemming from the inception of the Battle Creek Sanitarium, Battle Creek, Mich., in 1866. This institution was incorporated the following year as the Western Health Reform Institute. Later under the influence of the founders, promoters and workers of the Battle Creek Sanitarium the International Medical Missionary and Benevolent Association was formed, which subsequently was responsible for the American Medical Missionary College, Chicago and Battle Creek.

Health Insurance Bill to Go to Legislature.—A compulsory health insurance plan which would provide hospitalization and medical care for persons in California through equal contributions from employers and employees is being prepared with the approval of Governor Earl Warren for action by the legislature, the New York *Times* reported December 30. In discussing the matter with the council of the California Medical Association, the governor is reported to have emphasized that he did not favor "state medicine" and that the plan did not involve putting doctors on a state payroll and paying medical and hospital costs for the people out of public funds. "My information is that we can do the job by a 1.5 per cent contribution from each employee and employer," he said, adding that it might be necessary for the state to "stabilize" the health insurance fund during the first biennium of operation while its treasury was being built up. It was suggested that the payments be collected in the form of a payroll tax by the State Employment Stabilization Commission, which now handles unemployment insurance contributions. The health system would be made a division of the state department of public health, with a medical director in charge and with representatives of employees, employers and the medical and dental professions.

CONNECTICUT

Intern Report Issued as Guide.—A subcommittee on intern curriculum of the postwar planning board has published a report concerning a study of intern services and intern training in Connecticut hospitals. The report is issued as a guide in improving the quality of internships available in the state and conforms to the basic principles of the Council on Medical Education and Hospitals of the American Medical Association. It deals with staff appointments in hospitals, teaching coordinators, registered pharmacists, remuneration and staff meetings. One of its principal recommendations is the creation of a committee on intern training to be appointed from the attending staff and to be known as the "Intern Committee." The report is comprehensive in its recommendations for the treatment of the intern but makes no specific recommendation as to length of service. It discusses the remuneration of interns, training program, special teaching and library facilities. Two samples of teaching programs are presented, the first from a hospital of 150 beds and the second from one of the state's largest institutions. In its recommendations for the handling of reports for attending and resident staff, submitted monthly by attending physicians, residents and interns, it is recommended that suggestions and comments are to be considered confidential by the teaching coordinator or the Intern Committee. The report also offers a group of certain important topics to serve as a guide for the arrangement of teaching sessions. Comment is devoted to the maintenance of a "residency system" but no schedule is presented. The committee believes that residencies in clinical subjects are in increasing demand by young physicians who have completed their internships, particularly in those hospitals where the opportunities to the intern have been of advantage. The committee believes too that if more residencies were available in hospitals in the state an additional number of well trained young physicians would settle in communities within the state, where the need of service of many is already apparent. The subcommittee on intern curriculum, which was appointed by the committee on medical care and health of the state postwar planning board, consists of the following members:

Dr. Thomas P. Murdock, chief of medical service, Meriden Hospital, Meriden, chairman.
William J. Donnelly, administrator, Greenwich Hospital, Greenwich.
Dr. Louis P. Hastings, pathologist, St. Francis Hospital, Hartford.
Dr. Joseph H. Howard, attending obstetrician, St. Vincent's Hospital, Bridgeport.
Dr. John C. Leonard, assistant director, Hartford Hospital, Hartford.
Dr. Robert R. Nesbit, pathologist, Hospital of St. Raphael, New Haven.
Dr. Herbert Thoms, associate professor of obstetrics and gynecology, Yale University School of Medicine, New Haven.
Dr. Creighton Barker, secretary, Connecticut State Medical Society, New Haven.

ILLINOIS

Bruce Brown Made Head of Industrial Hygiene Division.—Dr. Bruce M. Brown, acting medical director of the division of industrial hygiene, Iowa Department of Health, Des Moines, has been appointed the new chief of the division of industrial hygiene of the Illinois Department of Public Health, effective December 1. He fills the vacancy that occurred when Dr. Milton H. Kronenberg resigned (THE JOURNAL, October 14, p. 444).

Chicago

Nutrition Forum.—On January 11 the Chicago Nutrition Forum, a member agency of the Chicago Nutrition Committee, will hold a meeting in the auditorium of the Peoples Gas Light and Coke Company to hear Dr. George E. Wakerlin, professor and head of the department of physiology, University of Illinois College of Medicine, discuss the consumers' responsibility in the enrichment program.

Ambrose Merrill Goes to New York.—Dr. Ambrose P. Merrill, medical director of St. Luke's Hospital, has resigned, effective January 1, to become superintendent of the Home for Incurables, New York. His successor at St. Luke's has not yet been named. Dr. Merrill came to Chicago in 1940 from San Francisco, where he had been assistant superintendent of the San Francisco County Hospital. He was assistant director at St. Luke's until 1942, when he was made medical director (THE JOURNAL, Jan. 17, 1942, p. 238).

A. M. A. Speakers at Chicago Medical Society.—On January 17 the Chicago Medical Society will be addressed at the John B. Murphy Memorial Auditorium by the following members of the American Medical Association:

Mr. J. W. Holloway Jr., Acting Secretary of the Council on Medical Service and Public Relations and Director of the Bureau of Legal Medicine and Legislation, Medical Service Problems.
Lieut. Col. Harold C. Lueth, M. C., liaison officer, Future Desires of Medical Officers.
Dr. Victor Johnson, Secretary, Council on Medical Education and Hospitals, Interns and Residents.
Dr. Olin West, Secretary and General Manager, Present Day Problems in Medicine.

Pasteur Monument Given to Medical Center.—The Louis Pasteur monument, standing atop a pedestal west of the Chicago Museum of Natural History, was presented December 12 to the Medical Center Commission by the Chicago Park District. It eventually will be placed in Convalescent Park in front of Cook County Hospital. The commission on December 28 voted an appropriation of $25,000 to move the statue, which weighs 54 tons and rests on a 545 ton marble and concrete base. In 1927 the statue was given to the park district by a citizens committee headed by the late Dr. Frank Billings. The monument will be rededicated as a symbol of medicine to mark the gateway to a 305 acre tract which the commission is seeking to acquire for the development of a medical center.

Midwest Conference on Rehabilitation.—The Institute of Medicine of Chicago is sponsoring a midwest conference on rehabilitation in the Grand Ball Room of the Drake Hotel, February 12. The conference will precede by one day the Annual Congress on Industrial Health of the American Medical Association and will be held in conjunction with it. Cosponsors are the Chicago Medical Society, the Council of Social Agencies of Chicago, the Chicago Hospital Council and the midwestern section of the American Congress of Physical Medicine. The program will include discussions concerning the relation of the local community to the Veterans', federal and state rehabilitation programs, role of industry in rehabilitation, employability of the handicapped and the development of local rehabilitation centers. The sixth Frank Billings Lecture of the Thomas Lewis Gilmer Foundation of the institute of medicine will be a feature of the meeting. The registration fee will be $1. Requests for programs and registration cards should be sent to the Institute of Medicine of Chicago, 86 East Randolph Street, Chicago 1.

MICHIGAN

Hospital Commission Recommends Change in Licensure Law.—A revised hospital licensure law, recommended by the Michigan Commission on Hospital Care and endorsed by the state medical society, will be presented to the Michigan legislature in January. The law provides for the management and maintenance of hospitals, sanatoriums, rest and nursing homes or other institutions caring for the sick and injured. The action is one of the first carried out by the state hospital commission, which is one of the study groups formed at the recommendation of the recently formed Commission on Hospital Care (THE JOURNAL, August 26, p. 1202), a nongovernment public service committee to study health facilities in the United States. Because the national commission was set up at the suggestion of the American Hospital Association for a two year study, financed by $35,000 grants each from the Commonwealth Fund, the W. K. Kellogg Foundation and the National Foundation for Infantile Paralysis, it was decided that an overall program could be obtained practicably through the organization of state study groups. On December 1 the state of Maryland had completed its work and study groups had been formed in Alabama, Maine, Michigan, Missouri, Nebraska, New York, North Carolina, North Dakota, South Carolina and Utah. Organizing committees had been formed in California, Kansas, Massachusetts, Oklahoma, Texas and Wisconsin, and interest had been expressed in a number of other states. The scope of the study on the national level will include an analysis of all facilities in the United States for the institutional care of the sick, including general, tuberculosis, nervous and mental, chronic, convalescent and other special types of hospitals; nursing homes, rest homes, hospital departments in homes for the aged, and public health centers. The study of professional and technical training, the distribution of professional and technical personnel and relationships with governmental departments and agencies will be included in the survey as far as they influence the organization and operation of hospital facilities. Through the local state programs a national analysis will be prepared by the national commission, which is also making available to the states recommended plans of procedure for their studies. Thomas S. Gates, LL.D., president of the University of Pennsylvania, Philadelphia, is chairman of the national commission, and Dr. Arthur C. Bachmeyer, director of hospitals, University of Chicago, is director of the two year survey.

MISSOURI

Terry Lecture.—Earl T. Engle, Ph.D., professor of anatomy, Columbia University College of Physicians and Surgeons, New York, delivered the annual Robert J. Terry Lecture, December 19, before the St. Louis Medical Society on "Endocrine Aspects of Menstruation, Amenorrhea and the Menopause."

OHIO

Gift for Blood Pressure Study.—An anonymous gift of $5,000 has been made for the research on high blood pressure being carried out by Dr. Harry Goldblatt, professor of experimental pathology and associate director of the Institute of Pathology, Western Reserve University School of Medicine, Cleveland, according to *Science*. This work has been supported chiefly by funds from the Louis D. Beaumont Trust.

Students Given Vocal Lessons.—Dr. Bruno Gebhard, director of the Cleveland Health Museum, is conducting a course at Western Reserve University of Medicine to teach medical students the art of talking. The "how-to-speak-to-patients" course is being given for the first time and, in a statement to the press, it was reported that "the young physician should realize that the patient has a right to know what is happening to him with respect to his illness."

Personal.—Dr. C. Herbert Cronick, Youngstown, has been appointed medical director of Youngstown Receiving Hospital for Mental Cases. Formerly the city contagious disease hospital, the institution has been leased by the state department of public welfare and is being remodeled to treat early mental cases. It has been estimated that about 400 persons can be treated at the hospital yearly, with no treatment exceeding twelve weeks. Patients needing more treatment will be transferred to Massillon State Hospital, Massillon. The Youngstown Hospital will be under the direction of Dr. Arthur G. Hyde, medical superintendent of the Massillon State Hospital.

PENNSYLVANIA

Physician Goes to Congress.—Dr. Thomas E. Morgan, Frederickstown, will represent the twenty-fourth congressional district in the new national House of Representatives. His district embraces Washington and Greene counties. This is said to be first time that Dr. Morgan has run for office.

Fildes Painting Given to Guthrie Clinic.—The original painting of "The Doctor," by Sir Samuel Luke Fildes, was presented to the Guthrie Clinic, Sayre, by Mr. Allan P. Kirby, New York. The painting was unveiled at special exercises at the clinic on November 16. The larger painting of "The Doctor," which is in the Tate Gallery in London, was made from this original.

Philadelphia

Procter Medal Established.—On January 23 Ivor Griffith, Ph.M., distinguished for his work in pharmacy, will receive the first Procter Medal, established recently by the Philadelphia Drug Exchange to commemorate William Procter Jr., "father of American pharmacy." The presentation will be made at a dinner at the Bellevue-Stratford Hotel. The citation accompanying the medal outlines Dr. Griffith's many activities in the field of pharmacy. Dr. Griffith reviewed the life and work of William Procter Jr. at the unveiling of Dean Cornwell's portrait of Procter last year.

Gifts to Temple University.—The John and Mary R. Markle Foundation has recently given the following grants to Temple University School of Medicine and Hospital:

A grant of $3,000 for a study of experimental cerebral concussion. This work is to be carried on by Drs. Ernest A. Spiegel and Mona Spiegel-Adolf.

A grant of $3,000 for a study of the effectiveness of alkali therapy in the states of acidosis of varying severity. This work to be carried on by Dr. Waldo E. Nelson.

A grant of $1,560 for a study of the etiology of cataract in riboflavin deficiency. This work to be carried on by William M. Hart, Ph.D.

In addition Temple University Hospital has received from the estate of John Edward Wells, deceased, $11,943.44 in memory of his wife's father, the late Dr. Edmund Wales Holmes. Dr. Holmes was the first surgeon at the Temple University Hospital from 1893 until 1903 and was also the first professor of surgery in the university medical school.

VERMONT

The Osler Lecture.—Edmund Newton Harvey, Ph.D., professor of physiology, Princeton University, N. J., delivered the first Osler Clinical Society Lecture of the current session at the University of Vermont College of Medicine, Burlington, December 14. His subject was "Decompression Sickness and the Formation of Bubbles in Blood and Tissues." The clinical society is the undergraduate students' society of the college of medicine.

Changes in Faculty at Vermont.—Dr. Bjarne Pearson, associate professor of pathology, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed professor of pathology at the University of Vermont College of Medicine, Burlington, effective January 1. Nicholas B. Dreyer, M.A., professor of physiology and pharmacology, Long Island College of Medicine, Brooklyn, has been appointed professor of pharmacology at the school, effective in February.

WASHINGTON

Tacoma Declared "Plague Port."—The city of Tacoma was in November declared a "plague port" by the U. S. Public Health Service, according to *Newsweek*. No human case of the disease had occurred in the city, but discovery of 11 "positive" infected rats among the 183 specimens found in old wooden harbor buildings and along the waterfront was responsible for a compulsory state of semiquarantine. Before docking at other ports, all ships from Tacoma must be fumigated. According to *Public Health Reports*, plague infection

was proved in 2 specimens collected at the waterfront, one a pool of 2 fleas from 2 rats, Rattus rattus, taken November 1, and the other a pool of 119 fleas taken from 65 rats, Rattus norvegicus, taken November 4.

WEST VIRGINIA

Ringworm Epidemic.—Kanawha County, according to the state health department, has what amounts to a mild epidemic of ringworm, with 175 cases reported from two areas as of December 15. There are no cases among adults and none among girls. The infection has been found in boys and is limited to the crown of the head or the areas between the hair line and the crown. Barber shops have been given a clean bill of health by the state health department, which reports that 90 per cent of the cases have been found in boys between the ages of 7 and 12. An educational program is now under way in Kanawha County schools with the purpose in mind of impressing on children the importance of refraining from resting their heads on the backs of seats in public places.

GENERAL

Casselberry Award.—The American Laryngological Association announces that its Casselberry Award will be available in 1945 for original investigation in the art and science of laryngology or rhinology. Theses must be received by the secretary, Dr. Arthur W. Proetz, 1010 Beaumont Building, St. Louis 8, before March 1.

Radiologists Cancel Annual Meeting, Hold Conference of Teachers.—The annual meeting of the American College of Radiology, scheduled to be held in Chicago in February, has been postponed because adequate hotel accommodations could not be obtained. Instead there will be a conference of teachers of clinical radiology and a panel discussion arranged by the Commission on Hospital Standards. The board of chancellors of the college will meet February 8-9. On the afternoon of the second day the Commission on Education will conduct a conference of teachers of clinical radiology. On Saturday morning, February 10, the Commission on Hospital Standards will present a panel discussion on "Radiology in Prepayment Plans."

National Committee on Alcohol Hygiene.—Announcement is made of the recent incorporation of the National Committee on Alcohol Hygiene with the following as members of the executive staff: Dr. Robert V. Seliger, Baltimore, director; Robert M. Lindner, Ph.D., Lewisburg, Pa., director of editorial and educational projects; Dr. Lawrence F. Woolley, Towson, Md., director of clinical investigators, and Victoria Cranford director of scientific investigators. The purpose of the group is to disseminate scientific information to the public through various educators on the subject of alcoholism with the primary view of educating individuals and the community about alcoholism as distinguished from social drinking and the significance of this medical-psychiatric problem in its effects on and relation to both the individual and the community. The committee will publish bimonthly an official journal called *Alcohol Hygiene* and will maintain national headquarters and editorial offices at 2030 Park Avenue, Baltimore 17. About 700 representatives of Baltimore's professional and civic life attended the society's first institute in Baltimore recently (THE JOURNAL, September 2, p. 39). The National Committee on Alcohol Hygiene plans to cooperate with other groups having similar educational objectives. It will make available speakers for lay and other students of alcoholism. It provides a research staff to organize and sponsor institutes similar to the one in Baltimore and will serve as a clearing center for proper evaluation of publicity. It will also provide a consultation service for community chest and other groups to aid in the organization of medically and psychiatrically supervised clinics for the diagnosis of alcoholism. Material on fundamental preventive measures based on practical medical-psychiatric knowledge and experience and on actual treatment of individuals with an alcohol problem will be furnished.

Modern Hospital Awards.—*Modern Hospital* has announced the winners in its recent contest for architects to design an ideal community medical center housing a 40 bed hospital, offices for the local physicians and dentists and headquarters for the local health department (THE JOURNAL, August 26, p. 1201). Samuel E. Lunden and Louis C. Dixon, associated architects of Los Angeles, won first prize of $1,000 for the community health center and Fisher and Fisher, architects, Denver, won first prize of $1,000 for the small hospital. The second prizes of $750 each went to Roslyn Ittelson, designer, and Dr. Leonard Greenburg, health officer, both of New York, for the health center competition, and to Basil Yurchanco of the Harvard Graduate School of Design, Cambridge, Mass., in the hospital competition. The third prizes of $500 each were awarded to Fisher and Fisher, architects, Denver, and to H. P. Van Arsdall, Cincinnati, for the health center and hospital designs respectively. In the health center competition honorable mentions carrying $100 awards went to Laurence P. Johnston, Chicago, E. Todd Wheeler, Chicago, and L. Forstner, Toronto, Canada. In the hospital competition honorable mentions also carrying $100 awards went to Robert J. Reiley, New York, Janet and Milton H. Caughey, West Los Angeles, and George Blumenauer and Associates and Paul H. Fesler, hospital administrator, Oklahoma City. In addition special commendations were given for four hospital designs by Harrison Gill, architect, Chattanooga, Tenn.; David Aron, Institute of Design, Chicago; Edward J. Toole, Hingham, Mass.; John C. Harkness and Charles D. Wiley, Washington, D. C. With the large postwar hospital construction program contemplated in this country, this competition is of special significance to architects, according to Marshall Shaffer, chairman of the jury of award. Mr. Shaffer is chief hospital architect of the U. S. Public Health Service, Washington, D. C. The other members of the jury who participated were Addison Erdman, architect, New York; Dr. Fred G. Carter, administrator of St. Luke's Hospital and hospital consultant, Cleveland; Graham Davis, hospital consultant, Kellogg Foundation, Battle Creek, Mich.; Mies van der Rohe, professor of architecture, Illinois Institute of Technology, Chicago, and Nathaniel A. Owings, architect, Chicago and New York.

Ear, Nose and Throat Meetings.—The programs of the section meetings of the American Laryngological, Rhinological and Otological Society have been announced as follows:

Eastern Section, Benjamin Franklin Hotel, Philadelphia, January 12:

Dr. Edmund P. Fowler, New York, Early Diagnosis and Arrest of Otosclerosis.
Drs. Leroy A. Schall and Daniel J. Reagan, Boston, Malignant Exophthalmos.
Dr. Joseph Stokes Jr., Philadelphia, Control of Cross Infections by Air Disinfection.
Dr. Francis W. Davison, Danville, Pa., Otolaryngologic Symptoms of the Psychoneuroses.
Dr. Fred W. Dixon, Cleveland, Clinical Results of the Intranasal Ethmoidectomy.
Dr. Chevalier L. Jackson, Philadelphia, Surgical Treatment of Cancer of the Larynx.
Comdr. Austin T. Smith (MC), Observations on the Clinical Use of Penicillin in Infections of the Ears, Nose and Throat.
Dr. John R. Richardson, Boston, New Treatment for Esophageal Obstruction Due to Meat Impaction.

Southern Section, Charlotte Hotel, Charlotte, N. C., January 15:

Dr. Clarence P. Jones, Newport News, Va., Treatment of Vincent's Angina.
Dr. Joseph D. Kelly, New York, Bilateral Cord Paralysis.
Drs. Charles D. Blassingame, Memphis, Tenn., J. Warren White, Norfolk, Va., and Fletcher D. Woodward, Charlottesville, Va., Use of Penicillin in Otolaryngology.
Dr. Richard H. Sweet, Boston, Recent Advances in the Surgical Management of Carcinomia of the Midthoracic Esophagus.
Dr. Porter P. Vinson, Richmond, Va., Diaphragmatic Hernia as a Cause of Difficulty in Swallowing.
Dr. Murdock S. Equen, Atlanta, Ga., Magnetic Extraction of Foreign Bodies from the Food and Air Passages.
Dr. Waitman F. Zinn, Baltimore, Significance of Hoarseness.
Dr. Emmett T. Gatewood, Richmond, Simple and Practical Procedure for Developing Esophageal Voice in the Laryngectomized Patient.

Middle Section, Indianapolis Athletic Club, Indianapolis, January 17:

Dr. Russell A. Sage, Indianapolis, Interesting Tongue Lesions.
Scott N. Reger, Ph.D., Iowa City, Practical Method of Fitting Hearing Aids.
Dr. Robert L. Glass, Indianapolis, Spasmodic Facial Neuralgia.
Dr. Lawrence R. Boies, Minneapolis, Irradiation of Nasopharyngeal Lymphoid Tissue: An Evaluation.
Dr. Paul H. Holinger, Chicago, Advances in Photography in Otolaryngology.
Major Truman G. Blocker, M. C., Maxillofacial Injuries in World War II.
Dr. Charles E. Kinney, Cleveland, Critical Review of the Fenestration Operation.
Dr. Gordon F. Harkness, Davenport, Iowa, Nonvirulent Diphtheria.
Dr. Mark H. Mothersill, Indianapolis, Use of Penicillin in Otolaryngology.

Western Section, Elks Club, Los Angeles, January 27-28:

Dr. Russell M. Decker, Pasadena, Calif., Prevention of Deafness in Children.
Comdr. Raymond A. Lower (MC), Blast Injuries to the Ear as Seen in a Large Naval Hospital.
Dr. Simon Jesberg, Los Angeles, Surgical Treatment of Frontal Sinusitis.
Dr. Lewis F. Morrison, San Francisco, Further Observations on the King Operation for Bilateral Abductor Paralysis of the Larynx.
Chauncey D. Leake, Ph.D., Galveston, Texas, Antibiotics.
Comdr. Sigurd Von Christierson (MC), Use of Penicillin in Acute Otitis Media and Its Complications.
Comdr. Roy F. Nelson (MC), External Otitis as Seen in the Pacific War Area.
Dr. John F. Tolan, Seattle, Treatment of Esophageal Varices.

Dr. Albert C. Furstenberg, Ann Arbor, Mich., president of the society, will open each section meeting.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 2, 1944.

The Shortage of Medical Books

All forms of publication are restricted by the war. There is a shortage of labor, and paper is rationed. Medical publication is severely hampered; journals are only half their prewar size, and medical publishers are in such difficulties that the medical group of the publishers' association has circulated a memorandum on them. They point out that they are responsible for maintaining the supply of textbooks, reference works and monographs for doctors, research and laboratory workers, medical students, nurses, pharmacists, veterinarians and all classes of medical auxiliaries. They also have to publish works especially concerned with war medicine and surgery and with first aid. Any reduction in their output must hamper medical education and the dissemination of medical knowledge and so injure the community, it is pointed out. During the war it has been impossible to maintain the basic requirements for education, as the following figures show: The number of doctors has increased from 61,109 to 68,235. The number of medical students who entered school between 1939-40 and 1943-44 was 12,132. All medical schools are full. Figures for nurses in training are not available, but the increase is known to be considerable. The requirements of the overseas market on medical publications are at least twice as great as they were in the prewar period. The empire depends almost entirely for its medical books on publishers in Britain. To meet this demand a wide range of textbooks has to be maintained, for each dominion and colony has its own preferences. Many textbooks are large, running to 1,000 or 2,000 pages. Moreover, the life of editions is short; to keep up to date new editions are required every three or four years, and under war conditions editions may last only a year or eighteen months.

In book production three main economies have been effected: the number of words to the page has been increased, margins have been made narrower and weight of paper has been reduced. But these measures cannot produce any substantial saving, because (1) many books are reprinted from standing type, (2) many are heavily illustrated and so have to be printed on paper of fair substance and (3) even before the war medical books were produced as economically as possible, often on the thinnest paper. The need for providing reprints and revised editions on the limited paper quota (40 per cent of prewar) has caused a considerable decline in the production of new books, including works on war medicine and surgery, which are urgently needed.

Another cause for the shortage of medical books is that their production can be entrusted only to a small number of printers who specialize in this work. These are now working with reduced staffs and are further restricted by heavy demands for the printing of government publications. It is expected that the postwar demands for medical books will long continue to exceed production. The numbers of the medical and nursing professions will be increased. The War Office has included medical books in its educational program for the armed forces, and similar demands are anticipated from the dominions as well as from other services in this country. Also there will be an urgent need to bring wartime medical advances to liberated countries long subjected to intellectual starvation. The threat of epidemics in the war stricken areas will call for books in considerable numbers for doctors and nurses and every kind of health organization and worker concerned in the prevention and treatment of disease.

Teaching and Research in Industrial Medicine

The trustees of the Nuffield Foundation have announced another benefaction: they have offered the universities of Durham, Glasgow and Manchester grants totaling $750,000 to assist in carrying out plans for the development, as soon as suitable staffs can be appointed, of teaching and research in industrial health. These grants will be spread over a period of ten years. Manchester, where it is proposed to create a chair of industrial health, will receive $350,000. A statement issued by the foundation says that the maintenance of a healthy industrial population involves the provision of greater facilities than now exist for education and research in problems of industrial health. Great Britain now has no university department devoted to educational work in industrial health and no facilities for postgraduate training in industrial medicine.

In January 1943 the Select Committee of the House of Commons on National Expenditure on the Health and Welfare of Women Workers drew attention to this lack, stating that "doctors who are new to industrial work have to learn slowly and painfully by experience many lessons that should and could be taught in courses of preliminary training if such were available." The three university departments which are to be formed should go a long way in remedying this. They should also assist the work of the Medical Research Council by creating further opportunities for research into specific problems connected with industrial medicine.

For the new departments to achieve their objective they will have to maintain close links within their universities with the science and engineering departments as well as with the organization for the teaching of social medicine, since the problems of industrial health relate to engineering, chemistry and other sciences and require for their solution cooperation of both medical and nonmedical persons. The staffs of the departments will also have to work in close cooperation with such bodies outside the universities as the factory department of the Ministry of Labor, the Industrial Health Research Board, local industries, employers and trade union officials. It is the hope of the foundation that a notable contribution to future well being of our people will result. In the past we have been behind America and other countries in not making special provision for such teaching and research in industrial medicine.

The Care of the Health of Children

A new department of child health has been opened at the University of Liverpool. The title is significant, showing the new emphasis on prevention rather than on treatment. At present two classes of physicians deal with children—those who treat them in the hospital and those in the school medical service and child welfare service. These two classes work separately, which is inefficient; some fusion or cooperation is desirable. The new department at Liverpool should initiate this, for it is the result of collaboration between the university, the city council and the voluntary hospitals. For the first time the University of Liverpool has a professor in child welfare, Dr. N. B. Capon. The new department will have its headquarters at a large municipal hospital for children with 950 beds. Three wards will be set aside as a main teaching and research unit. All the wards of the Royal Liverpool Children's Hospital and the Liverpool Maternity Hospital will take part in the program.

The great advantage of placing the headquarters at a municipal hospital lies in the access to centers for preventive work, such as infant welfare clinics, child guidance clinics and clinics for tuberculous and rheumatic children. The department will train undergraduates, postgraduates, hospital nurses, health visitors and social workers in the care of children. It will also promote research in the various aspects of child health.

In recent years developments on similar lines have seldom taken place. In Edinburgh a university department in child

life and health dates from 1931. The Nuffield Provincial Hospitals Trust has recently made a grant for research in infant dietetics and problems of the newborn period. In Newcastle-upon-Tyne a department of child health of the University of Durham was opened in 1943. A professor, who is also director of the department, was appointed in 1942. The department centers round a children's clinic in the Royal Victoria Infirmary, adjacent to the medical school. The professor of child health is a member of the Maternity and Child Welfare Committee of the Newcastle Health Committee. In London an Institute of Child Health, associated with the Hospital for Sick Children, Great Ormond Street, and with the obstetric department of the British Postgraduate Medical School, is planned. It is hoped that a chair of child health will be founded. For the first time in its history our leading children's hospital will have its medical and nursing staff actively participating in the study and care of the healthy child.

Plaster Splints

Difference of opinion has been expressed as to whether or not plaster splints should be padded. The War Office has issued an order, based on experience, that for transportation of the wounded all casts should be padded, with the plaster applied over wool, not directly on the skin. The danger of an unpadded cast is that the limb may swell and the circulation be impeded unless the patient is under constant supervision such as is possible only in a base hospital. There, under an experienced surgeon, there is no longer the same need to avoid unpadded casts. An essential point allowing no modification is that all plasters which embrace the limb must be split, even though they are padded. Only two types of plaster cast need not be split—the Tobruk for fractured femurs or wounds of the knee joint and the thoracobrachial box plaster for the arm. These plasters are in a different category, for neither truly embraces the limb; both are padded, however, with ample wool.

MOSCOW

(From a Special Correspondent by Cable)

Dec. 28, 1944.

Academy of Medical Sciences of U. S. S. R.

The new academy of medical sciences of the Union of Soviet Socialist Republics has just held its inaugural meeting in Moscow. The peoples commissar of health in the U. S. S. R., Georgiy Miterev, addressing the inaugural meeting, said that the immense scope and profound differentiation of medical research necessitated creation of a new coordinating agency, the Academy of Medical Sciences. The immediate work of the academy, besides questions of theory, would be to promote methods for preventing infectious disease and healing wounds and shock. The academy at its inaugural meetings elected Col. Gen. Nikolai Burdenko, hero of socialist labor, surgeon in chief of the Red Army, member of the Academy of Sciences, U. S. S. R., president; Alexei Abrikosov, pathoanatomist, Mikhail Malinovskiy, gynecologist, and Pyotr Kupriyanov, surgeon, vice presidents; Vasiliy Parin, physiologist and author of interesting researches on interoreceptors of vessels of lungs, secretary, and Alexander Bogomolets, hero of socialist labor, pathophysiologist and president of the Ukranian Academy of Sciences, Hyppolite Davidovsky, pathoanatomist, Julian Dzhanelidze, surgeon in chief of the Navy and Col. Gen. Leon Orbelli, chief of the Army Medical Academy, members of the presidium. The academy at present consists of sixty members, but new members as well as corresponding members are shortly to be elected.

MEDICAL RESEARCH

Medicine has made rapid strides in the Soviet Union. Important advances have been made in morphology, physiology, hygiene, clinical medicine, microbiology and traumatology. Alexei Abrikosov, Alexei Zavarzin, Vladimir Vorobyev, Boris Lavrentiev, Nikolai Anichkov, Dmitri Nasonov and others have contributed many new ideas to morphology, basing their conclusions on widely organized research. Zavarzin investigated the evolution of animal tissues. Vorobyev founded the physiologic trend in anatomy. Lavrentiev has done valuable work in pure physiology. Anichkov made a detailed study of arteriosclerosis. Prominent among achievements of physiologists is the work of Ivan Pavlov, "the world's premier physiologist," as he was called by foreign scientists at the fifteenth world congress of physiologists in 1935. His mind was constantly engaged in the secret of psychic life: "higher nervous activity." Pavlov's disciples carried on his scientific legacy. Academician Leon Orbelli, Pavlov's pupil and successor, is working on the physiology of the vegetative nervous system, cerebellum and sense organs and the new sphere of evolutionary physiology.

Another Pavlov disciple, Academician Konstantin Bykov, has gained celebrity for his researches into the role played by the cortex of the brain in activities of human internal organs. Academician Ivan Razenkov has done considerable work on the physiology of digestion, especially in high altitudes. Academician Lena Stern's work on the hematoencephalitic barrier is well known.

Medical research in the Soviet Union is highly organized. There are over two hundred research institutes, seventy research laboratories and seventy-two medical colleges. Scientific and educational institutions of the peoples commissariat of health have over twenty-five hundred professors and doctors of science and some twenty-five thousand scientific workers, a large proportion of whom are women. The research work embraces every branch of medicine. Medical research is planned by a scientific council and is both theoretical and practical although, generally speaking, theory in the Soviet Union is not divorced from practice.

SURGICAL DEVELOPMENTS

Scientific research in field surgery is being conducted on a wide scale in the Soviet Union. In the past twenty years Nikolai Burdenko has performed amazing operations on the brain and on the medulla oblongata and its connecting tracts. It is due chiefly to Burdenko that the Neurosurgical Institute in Moscow owes its fame.

Andrei Savinkin has performed more than a hundred operations for cancer of the intestine. Servei Yudin has performed difficult and complex operations on the alimentary canal and the stomach. Julian Dzhanalidze was one of the first men in the world to develop a method for plastic surgery of the skin. Vladimir Filatov several years ago suggested the original method of grafting the cornea of corpses to living persons as well as his method of "round stalk" graft, which is now adopted in plastic operations in many countries.

Marriages

JOHN J. MANNING, Sioux City, Iowa, to Miss Mildred Nigon of Rochester, Minn., in Jefferson Barracks, Mo., November 30.

MARTIN ROBERT BROMAN, Evanston, Ill., to Mrs. Vivian Lawrence Pratt of Manchester, N. Y., October 15.

JOHN J. RUPP, Coeur d'Alene, Idaho, to Miss Audrey Chase Meacham of Clayton, Mo., September 27.

LEO R. GRINNEY, Drake, N. D., to DR. JUNE LOUISE CHRISTENSEN of Racine, Wis., September 28.

JOHN DAVID LINDNER, Ocala, Fla., to Miss Billie Wyatt Morris of Roanoke, Va., September 24.

JAMES GUY PRICE, Norfolk, Va., to Miss Beatrice Hope Watkins of South Hill, September 10.

NICHOLAS S. GIMBEL to Miss Barbara Jean Entenberg, both of New York, November 11.

NAOMI KAPLAN to Lieut. Seymour J. Wenner, both of New York, November 10.

Deaths

George Edward Follansbee ✠ for many years chairman of the Judicial Council of the American Medical Association, died in Cleveland, January 1.

Dr. Follansbee was born in Cleveland Oct. 16, 1871. He graduated at Western Reserve University School of Medicine in 1895. His career showed throughout his love for service to medical organization. His local interests included service as staff member at the St. Alexis Hospital and membership in the Academy of Medicine of Cleveland. For many years he had served the academy as a trustee and in other capacities, becoming president in 1918. In 1940 he was awarded honorary membership in recognition of his long service to the academy and to the medical profession. In 1944 the academy acknowledged his many years of service by awarding him its Distinguished Service Medal, the citation stating that he had done as much as any living physician to bring the academy to its position of importance and influence. A former fellow of the American College of Surgeons, Dr. Follansbee is also a specialist certified by the American Board of Surgery. He was president of the Ohio State Medical Association in 1925 and of the Cleveland Medical Library Association in 1931. Representing the Ohio State Medical Association, Dr. Follansbee was a member of the House of Delegates of the American Medical Association from 1919 to 1922 and from 1924 to 1930. He was appointed a member of the Judicial Council of the Association in 1925, again in 1930, in 1935 and again in 1940. In 1944 Dr. Follansbee resigned his chairmanship of the Council which he had held since 1928. He had served with the Committee on the Costs of Medical Care, first as a member representing private practice and later as a member of the executive committee.

In the death of Dr. Follansbee the American Medical Association loses a loyal friend and counselor, whose every act and decision were guided by his respect for the highest ideals and ethics of traditional medicine.

GEORGE E. FOLLANSBEE, M.D., 1871-1945

Estes Nichols ✠ Portland, Maine; University of Vermont College of Medicine, Burlington, 1900; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the American Clinical and Climatological Association, American Heart Association, American Public Health Association, American Trudeau Society, International Tuberculosis Association and the American Academy of Tuberculosis Physicians; served as a member of the board of directors of the National Tuberculosis Association; a director and vice president of the Maine Public Health Association; a director of the Cumberland County Public Health Association; served during the Spanish-American War and World War I; colonel, medical reserve corps, U. S. Army, not on active duty; formerly associated with the U. S. Public Health Service; a member of the honorary staff of the Maine General Hospital and consultant to the Maine Eye and Ear Infirmary, Children's Hospital and the U. S. Marine Hospital; for many years medical superintendent of the Maine State Sanatorium, Hebron; died December 12, aged 70.

Mortimer Warren ✠ Portland, Maine; Johns Hopkins University School of Medicine, Baltimore, 1900; assistant clinical pathologist at the Cornell University Medical College, New York, from 1902 to 1910; specialist certified by the American Board of Pathology, Inc.; member of the American Society of Clinical Pathologists, New England Cancer Society and the New England Pathological Society; fellow of the American College of Physicians; chairman of the cancer committee of the Maine Medical Association; formerly associated with the U. S. Public Health Service; served in the medical corps of the U. S. Army during World War I; special commissioner for infantile paralysis control, Maine, from 1930 to 1932; pathologist at the Roosevelt Hospital, New York, from 1910 to 1916; pathologist at the Maine Eye and Ear Infirmary and since 1922 at the Maine General Hospital; received the honorary doctor of science degree from Bowdoin College in 1931; died at his home in Cape Elizabeth October 8, aged 70, of heart disease.

Elijah White Titus ✠ Washington, D. C.; George Washington University School of Medicine, Washington, 1910; also a pharmacist; clinical professor of obstetrics and gynecology at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; member of the Washington Gynecological and Obstetrical Society, Hippocrates Galen Medical Society and the George Washington University Medical Society, of which he had been president; in 1941 honored by the General Alumni Association of George Washington University for faculty service of more than twenty-five years; on the medical board and the board of governors of the Columbia Hospital for Women and Lying-In Asylum; consultant in gynecology at Children's Hospital; on the staffs of George Washington University and Garfield hospitals; died December 11, aged 59.

Charles Edward Conrad ✠ Harrisonburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1905; specialist certified by the American Board of Pediatrics; served as president of the Rockingham County Medical Society, the Medical Association of the Valley of Virginia and the Virginia Pediatric Society; charter member of the American Academy of Pediatrics; formerly chairman of the pediatric section of the Southern Medical Association; past president of the Harrisonburg Rotary Club; received the Silver Beaver award for meritorious leadership in the Boy Scouts of America; life member of the Rockingham Library Association; on the staff of the Rockingham Memorial Hospital; died in the University of Virginia Hospital, Charlottesville, November 1, aged 65.

Norman Edward Ditman ✠ Palm Beach, Fla.; Columbia University College of Physicians and Surgeons, New York, 1900; formerly instructor in pathology at his alma mater; served on the staffs of St. Luke's, Roosevelt and Sloane Maternity hospitals in New York; on the staffs of the Good Samaritan and St. Mary's hospitals, West Palm Beach; veteran of the Spanish-American War; member of the National Defense Council and served as medical director of a Red Cross hospital during World War I; served for two years as head of the public health division of the New York Academy of Medicine and for many years as a director of the department of industrial hygiene of the American Museum of Safety; formerly visiting physician at Ritz-Carleton, Pierre and Gladstone hotels, New York; died December 15, aged 67, of coronary thrombosis.

John Kerr Pepper ✠ Winston-Salem, N. C.; College of Physicians and Surgeons, Baltimore, 1907; fellow of the American College of Physicians; served as president of the Radiological Society of North Carolina; past president of the Forsyth County Medical Society; formerly a member of the state medical board for nurses; charter member of the Kiwanis Club and served as lieutenant governor of the third district of the Kiwanis International; member of the county board of health; on the staffs of the City Memorial and North Carolina Baptist hospitals; died October 31, aged 67, of heart disease and pneumonia.

Samuel Taylor Bassett, University City, Mo.; Barnes Medical College, St. Louis, 1905; Washington University School of Medicine, St. Louis, 1907; member of the American Medical Association; on the staff of the Missouri Baptist Hospital, St.

Louis, where he died November 1, aged 71, of pituitary dysfunction and lobar pneumonia.

Eugene Langdon Beard, Garber, Okla.; Ensworth Medical College, St. Joseph, Mo., 1908; city physician; died August 22, aged 58.

Nathan George Bennett, Haviland, Kan.; Barnes Medical College, St. Louis, 1902; member of the American Medical Association; died October 8, aged 71, of coronary thrombosis.

Robert Wilson Clark, Venango, Pa.; Western Reserve University Medical Department, Cleveland, 1884; member of the American Medical Association; died in the Meadville City Hospital, Meadville, August 28, aged 84, of senility.

Jake A. Hook, Pleasant Plains, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; died October 14, aged 61, of lymphatic leukemia.

George T. King, Elgin, Texas; University of Louisville (Ky.) Medical Department, 1886; died October 14, aged 82, of cerebral hemorrhage and generalized arteriosclerosis.

William Thomas McBrayer, Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1942; served an internship and residency in surgery at the Grady Memorial Hospital, where he died October 23, aged 25, of bronchiogenic carcinoma.

Royall J. Miller, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1881; died in the Georgia Baptist Hospital October 17, aged 83, of myocardial failure and uremia.

Weston Peter Miller, Eunice, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; member of the American Medical Association; died in the Touro Infirmary, New Orleans, October 28, aged 58.

John White Moore, Gloversville, N. Y.; Vanderbilt University School of Medicine, Nashville, 1904; formerly a medical inspector of the schools in Nashville, Tenn.; served on the staff of the Nathan Littauer Hospital; died October 6, aged 66.

Andrew Kincannon Naugle, West Point, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1905; served on the pension board of the Spanish-American Veterans; at one time Clay County health officer; a director of the Bank of West Point; served on the city school board for many years; died October 29, aged 66, of cerebral hemorrhage.

Alice Antoinette Pendleton, Cleveland; University of Oklahoma School of Medicine, Oklahoma City, 1937; served an internship at the Bethany Methodist Hospital, Kansas City, Kan.; died in the City Hospital October 14, aged 42.

Alva Sherman Pinto ⊕ Omaha; John A. Creighton Medical College, Omaha, 1898; health officer of Omaha; served on a Philippine cholera commission from 1900 to 1903; veteran of the Spanish-American War and World War I; on the staff of the Doctors' and St. Joseph's hospitals; died December 7, aged 72, of coronary occlusion.

Clara Stone, Los Angeles; Chicago College of Medicine and Surgery, 1912; died September 7, aged 60, of hypertensive heart disease.

Elmer John Tiedemann, Adrian, Minn.; Rush Medical College, Chicago, 1886; died October 28, aged 83, of acute myocardial failure.

John Kirtland Tressel, Alliance, Ohio; University of Wooster Medical Department, Cleveland, 1902; served during the Spanish-American War and World War I; died in the Veterans Administration Facility, Dayton, October 13, aged 66, of hypertensive heart disease.

John Pierce Turk, Nelson, Ga.; Atlanta College of Physicians and Surgeons, 1904; member of the American Medical Association; formerly mayor of Nelson; member of the board of education and Pickens County Selective Service Board; died October 26, aged 65, of coronary thrombosis.

Ralph Wallace Warnock ⊕ St. Paul; University of Minnesota Medical School, Minneapolis, 1921; specialist certified by the American Board of Internal Medicine; clinical instructor, division of internal medicine, at his alma mater; served an internship at the Minneapolis General Hospital; on the staffs of the Ancker, St. John's, Charles T. Miller and St. Luke's hospitals; died October 1, aged 53.

Hartwell Weaver, Dickson, Tenn.; Vanderbilt University School of Medicine, Nashville, 1910; member of the American Medical Association; died September 17, aged 58.

Eugene Griffith Wilcox, Drummond, Mont.; Northwestern University Medical School, Chicago, 1924; first lieutenant, medical reserve corps, U. S. Army, not on active duty; died in Missoula October 11, aged 50, of carcinoma of the hand.

DIED IN MILITARY SERVICE

Alfred Lee Clifton ⊕ Medical Director, Captain, U. S. Navy, Smyrna, Del.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; commissioned a lieutenant (jg) in the medical corps of the U. S. Navy on July 15, 1908; later promoted to lieutenant, lieutenant commander, commander and captain; fellow of the American College of Surgeons; medical officer in command of the United States Naval Convalescent Hospital, Sun Valley, Ketchum, Idaho, where he died February 22, aged 62, of arteriosclerotic coronary heart disease.

Wilbur Leroy Edgerton ⊕ Baton Rouge, La.; Louisiana State University School of Medicine, New Orleans, 1939; served an internship at the Charity Hospital in New Orleans; commissioned a first lieutenant in the medical corps, Army of the United States, on July 30, 1942; later promoted to captain; a flight surgeon; died in the Asiatic area September 17, aged 30, of pneumonia.

Rudolph M. Hecht ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1933; member of the American Academy of Dermatology and Syphilology and the American Association for the Study of Allergy; served an internship at the Michael Reese Hospital; commissioned a captain in the medical corps, Army of the United States, on Sept. 28, 1942; died in the European theater of operations September 16, aged 38, of injuries incurred in a vehicle accident.

Paul Hubbard Lowry, Syracuse, N. Y.; Syracuse University College of Medicine, 1922; member of the American Medical Association; fellow of the American College of Surgeons; instructor in clinical surgery at his alma mater; on the staff of the Hospital of the Good Shepherd, Syracuse University; surgeon, Syracuse University Infirmary; for many years physician of the Syracuse University athletic teams; commissioned a major in the medical corps of the Army of the United States on Aug. 12, 1941; began active duty on Sept. 1, 1942; died in Camp Joseph T. Robinson, Ark., November 5, aged 47.

Edward Patrick Manning, Milton, Mass.; Tufts College Medical School, Boston, 1937; served an internship at the Boston City Hospital; commissioned a lieutenant (jg) in the medical corps, U. S. Naval Reserve, on Feb. 7, 1941; later promoted to lieutenant and lieutenant commander; died in the U. S. Naval Hospital, Portsmouth, Va., August 21, aged 34, of subacute bacterial endocarditis.

Charles Walton Purcell, Danville, Va.; University of Virginia Department of Medicine, Charlottesville, 1933; member of the American Medical Association; served an internship at the Orange Memorial Hospital, Orange, N. J., and the New York Post-Graduate Medical School and Hospital, New York; served a residency in pediatrics at the University of Virginia Hospital, University, Va.; commissioned a first lieutenant in the medical corps, Army of the United States, on Aug. 20, 1942; later promoted to captain; died near Napa, Calif., November 11, aged 36, of injuries received in an automobile accident.

William Emmett Ryan ⊕ Midland, Texas; Baylor University College of Medicine, Dallas, 1925; fellow of the American College of Surgeons; past president of the Ector-Midland-Martin-Howard-Andrews-Glasscock Counties Medical Society; served as councilor and past president of the Second District of the State Medical Association of Texas; for many years served as city and county health officer; owned and operated the Ryan Hospital and Clinic from 1931 to 1942; charter member and past president of the Rotary Club; for many years director of the chamber of commerce, serving as president of that organization; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on June 1, 1925; promoted to captain; began active duty as a major, medical corps, Army of the United States, Sept. 25, 1942; later promoted to lieutenant colonel; died near Vendome, France, September 19, aged 45, of injuries incurred in a vehicle accident.

Joseph Duerson Stout ⊕ Washington, D. C.; George Washington University School of Medicine, Washington, 1913; Army Medical School, 1918; served during World War I; formerly professor of neurology at his alma mater; commissioned a major in the medical reserve corps, U. S. Army, March 14, 1925; began active duty as a lieutenant colonel in the Army of the United States March 5, 1941; died in England, November 6, aged 57, of cerebral hemorrhage.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1935 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

48:447-600 (Oct.) 1944

Treatment of Carcinoma of Cervix During Pregnancy. H. W. Jones Jr. and W. Neill Jr.—p. 447.
*Observations on Rh Factor in Its Relation to Hemolytic Anemia of Newborn Infant. H. Lubinski, B. Benjamin and G. J. Strean.—p. 464.
Psychodynamic and Therapeutic Aspects of Functional Dysmenorrhea. F. Wengraf.—p. 475.
Fetal Electrocardiography and Stethography. S. S. Paley and S. Krell. —p. 489.
Thrombocytopenic Purpura in Pregnancy: Review of Literature with Report of 3 Cases. W. F. Finn.—p. 497.
Study of Commercially Manufactured Catamenial Tampons. Irja Elizabeth Widenius.—p. 510.
Vaginitis Treated with Antiseptic Buffered Acid Jelly. J. C. Brougher. —p. 523.
True Knots of Umbilical Cord. J. P. Hennessy.—p. 528.
*Clinical Significance of Struma Ovarii. S. B. Gusberg and D. N. Danforth.—p. 537.
*Vagitus Uterinus with Prolapse of Umbilical Cord. A. M. Mitchell. —p. 547.
Antepartum Study of Fetal Polarity and Rotation. A. I. Weisman. —p. 550.
Hyperthyroidism and Pregnancy. I Kibel.—p. 553.

Rh Factor in Relation to Hemolytic Anemia of Newborn Infant.—Lubinski and his collaborators consider it desirable to abandon the previous terminology, such as erythroblastosis fetalis, icterus gravis, congenital anemia and hydrops fetalis, which designate some of the clinical manifestations associated with the disease. Since hemolytic anemia is the most important feature, the term hemolytic anemia of the newborn seems appropriate for all forms of the disease. The authors studied 6 cases of hemolytic anemia of the newborn which occurred in six families. There was evidence that 7 other infants in these families had probably suffered from this disease. Common to all cases tested was the combination of the following conditions: The mother was Rh negative, the father was Rh positive (only one father was not available for testing), and the infant was Rh positive. All the mothers had anti Rh agglutinins in their serums. Immunization of an Rh negative woman by repeated transfusions of presumably Rh positive blood was later followed by fatal hemolytic anemia of her first newborn infant. Rh negative women should not be transfused with Rh positive blood, to prevent the possibility of this undesirable effect on future Rh positive offspring. A possible role of complement and of the liberation of hemolysins after the destruction of red blood cells in the clinical picture of hemolytic anemia of the newborn is discussed. No correlation was found between the titer of anti Rh agglutinins in the mother's serum at parturition and the severity of the disease in her newborn infant. As the treatment of choice for this disease, the infant should receive a transfusion of a concentrated suspension of washed Rh negative red blood cells as early as possible, and this should be repeated as often as may be necessary. A suspension of washed cells from the mother's blood may be used if no suitable donor is available. Washed cells from the mother's blood should be used in any case in which the mother and her newborn infant who shows evidence of the disease are both Rh positive or both Rh negative.

Struma Ovarii.—Gusberg and Danforth state that there have been 8 cases of struma ovarii recorded in the pathologic files of the Sloane Hospital for Women in the past twenty years. This represents 2.7 per cent of 297 ovarian teratomas of all types which were examined during the same period. Of the 8 cases, 7 presented the usual clinical symptoms which accompany benign ovarian tumors: intermittent abdominal pain, painless pelvic or abdominal masses and in 1 instance acute abdominal pain due to torsion of the pedicle. In these cases the presence of thyroid tissue is only of pathologic interest. The cystic tumors were generally multilocular, and 3 of the 7 contained epidermoid elements characteristic of the ordinary dermoid cyst. Microscopically, none of these cases showed evidence of hyperplastic changes in the thyroid tissue. The eighth case presented a symptom complex of an unusual nature. A huge struma colli, a large struma ovarii and evident thyrotoxicosis were coexistent. The actual role of the ovarian tumor in the production of hyperthyroidism is problematic. The microscopic findings, the probable mechanical contribution of a huge goiter to the elevated basal metabolic rate and the persistent tachycardia after the thyroidectomy might be considered as presumptive evidence that the ovarian tumor contributed to the thyrotoxicosis. That struma ovarii is capable of producing, or at least contributing to, thyrotoxicosis is established. It is this ability which distinguishes the ovarian struma among all ovarian neoplasms. Cases of functioning ovarian struma may easily escape diagnosis, either through failure to appreciate mild hyperthyroid symptoms or through chance avoidance of thyroid tissue in the sectioning of large ovarian teratomas.

Vagitus Uterinus with Prolapse of Umbilical Cord.—Kitzmiller and Mitchell cited three conditions which must be present in order for crying in utero to become evident: 1. The membranes must have ruptured. 2. There is usually some operative manipulation to stimulate the infant. 3. There must be entrance of air into the uterus. Mitchell describes the delivery of a woman aged 29 in whom the membranes became visible twenty-five minutes after admission. A membrane-covered mass protruded from the vagina. The membranes ruptured spontaneously, and a loop of umbilical cord about 30 cm. in length was found prolapsed. Shortly thereafter the infant was heard crying loudly enough to be audible to all in the room. Fetal heart tones were 100 per minute but were still strong. An unsuccessful attempt was made to replace the loop of cord, and it was decided to deliver by version and breech extraction. Without unusual difficulty a female stillborn infant which weighed 6 pounds 2 ounces (2,900 Gm.) was delivered by combined podalic version and breech extraction.

American Review of Tuberculosis, New York

50:267-364 (Oct.) 1944

Spirometric and Bronchospirometric Studies in Pneumothorax. G. C. Leiner.—p. 267.
Bronchography in Pulmonary Tuberculosis: I. Normal or Questionable Roentgenographic Findings in Lungs and Positive Sputum. B. A. Dormer, J. Friedlander and F. J. Wiles.—p. 283.
Id.: II. Radiographic Blackout—Evaluation of Underlying Lesions. B. A. Dormer, J. Friedlander and F. J. Wiles.—p. 287.
Injuries of Thorax in Battle Casualties. L. K. Ferguson and R. B. Brown.—p. 293.
Round Densities Within Cavities: Lung Lesions Simulating Pathognomonic Roentgen Sign of Echinococcus Cyst. I. D. Bobrowitz.—p. 305.
Tuberculosis of Antrum: Report of Case. D. B. Radner and F. J. Pinkerton.—p. 313.
*Fate of Very Young Children with Tuberculosis. Gertrude F. Mitchell and H. S. Willis.—p. 316.
Tubercle Bacilli in Stomach Contents of Healthy Normal Adults Exposed to Tuberculosis. C. R. Smith.—p. 330.
Specific Cytotoxic Action of Tuberculin: Quantitative Studies on Tissue Cultures. Dorothy H. Heilman, W. H. Felmand and F. C. Mann. —p. 344.
Oxygen Lavage of Pleural Space: Note on Technic. J. F. B. Zweighaft. —p. 357.

Fate of Young Children with Tuberculosis.—Mitchell and Willis say that from 1922 until 1938, when the present study was ended, 2,091 patients up to age 14 were admitted to the Children's Division of the Maybury Sanatorium. Of these, 243 were 3 years of age or younger and were studied by Mitchell and Willis. Some of the patients of this group were brought to the hospital because of manifest illness, but the larger number were given diagnoses in the course of contact examinations and most of them were without symptoms. All of the 243 had tuberculosis. No one was admitted on the basis of a tuberculin reaction alone. Their diseases were classified on the basis of the x-ray appearance into primary and reinfection types. The outlook was distinctly worse for the reinfection than for the primary type of tuberculosis. With both the primary and reinfection types of tuberculosis the Negro child had a poorer chance

of survival than the white child. The younger children (birth through 18 months) had a much higher fatality than the older ones (19 to 36 months). The children discharged alive who had remained in the hospital longer than three months had a decidedly more favorable fatality experience than those who had remained a shorter period. (Fifty-eight per cent of all the children remained in the hospital longer than one year.) The children discharged with the disease apparently arrested had a more favorable subsequent fatality experience than those discharged with a less favorable clinical status. Nearly all of the children admitted with active primary lesions who were hospitalized until they could be discharged with apparently arrested tuberculosis were found, over a rather long period of follow-up, to have remained well. For this reason, a plea is made that children with active tuberculosis, with or without symptoms, be provided with adequate treatment in a hospital.

California and Western Medicine, San Francisco

61:179-228 (Oct.) 1944

Permanent Emergency Medical Service for Disaster Relief. H. Gibbons. —p. 185.
Burns. H. M. Blackfield.—p. 187.
Crush Syndrome. C. A. Walker.—p. 190.
Chemical Warfare Agents: Casualties Therefrom. D. A. Rytand.—p. 191.
Wounds: Their Care Under Civilian Defense. J. H. Woolsey.—p. 193.
Head and Blast Injuries. E. J. Morrissey.—p. 196.
Hospital: In Emergency Medical Service. A. J. J. Rourke.—p. 199.
Shock. R. Ward.—p. 201.
California Physicians' Service: Report on Hearing Before U. S. Senate Subcommittee on Wartime Health and Education. T. H. Kelly. —p. 207.

Experimental Medicine and Surgery, Brooklyn

2:193-276 (Aug.) 1944

Studies on Acoustic Phenomena Over Vessels of Neck in Healthy and Diseased Heart. F. Groedel and M. Miller.—p. 193.
Kidney Bleeding Produced by Alcohols and Some Anesthetics. S. Levy-Hockman.—p. 216.
Brain Lesions Following Prolonged Overdosage with Desoxycorticosterone Acetate. H. Selye, Eleanor Beland and Octavia Sylvester. —p. 224.
Effect of Salts on Activity of Tumor Triphosphatase. Lea Frankenthal.—p. 229.
Extent of Digestion of Certain Dietary Proteins by Proteinases of Digestive Tract. P. I. Fodor, S. Kuk-Meiri and A. Fodor.—p. 237.
Adrenergic Activity in Rat Following Severe Traumatization of Extremities and Intestine. W. Raab.—p. 252.
Influence of Vagus Stimulation on Nodal Rhythm. B. Kisch.—p. 259.
Case of Digitalis Poisoning, with Morgagni-Adams-Stokes Syndrome. B. Kisch.—p. 262.

Journal of Nutrition, Philadelphia

28:219-304 (Oct.) 1944

Choline and Pyridoxine Content of Meats. J. M. McIntire, B. S. Schweigert and C. A. Elvehjem.—p. 219.
Inadequacy of Lactose and Beta-Lactose as Dietary Carbohydrates for the Rat. B. H. Ershoff and H. J. Deuel Jr.—p. 225.
Thiamine Content of Hen Eggs During Incubation. N. S. Scrimshaw, W. P. Thomas, J. W. McKibben, C. R. Sullivan and K. C. Wells. —p. 235.
Effect of Thiamine Depletion and Restoration of Muscular Efficiency and Endurance. J. W. Archdeacon and J. R. Murlin.—p. 241.
*Effect of Institutional Cooking Methods on Vitamin Content of Foods: I. Thiamine Content of Potatoes. Anne W. Wertz and C. Edith Weir. —p. 255.
Requirement of Tryptophan by Chick. C. R. Grau and H. J. Almquist. —p. 263.
Fractionation of Phosphorus Compounds in Certain Vegetables. E. Bennett.—p. 269.
*Effects of Variations in Dietary Protein on Physical Well Being of Men Doing Manual Work. R. C. Darling, R. E. Johnson, G. C. Pitts, F. C. Consolazio and P. F. Robinson, with technical assistance of A. Kibler and M. Bartlett.—p. 273.
Absence of Nerve Degeneration in Chronic Thiamine Deficiency in Pigs. M. M. Wintrobe, R. H. Follis Jr., S. Humphreys, H. Stein and Marjorie Lauritsen.—p. 283.
Ineffectiveness of Vitamin E in Preventing Cholesterol Deposition in Aorta. H. Dam.—p. 289.
Toxicity of Fractions of Hog Liver Fatty Acids to Chicks Fed a Vitamin E Deficient Diet. H. Dam.—p. 297.

Institutional Cooking Methods and Thiamine Content of Potatoes.—Wertz and Weir analyzed foods obtained at a college dining hall which served three meals a day to 500 students. The potatoes for the noon and the evening meal were peeled with an electric abrasive peeler between 9 and 10 o'clock in the forenoon. The potatoes which were served for the noon meal were washed and cooked immediately, whereas those used for the evening meal were placed in a vat and soaked for approximately six hours in tap water, which was slowly running into and out of the vat. On removal from the water the potatoes were placed in perforated metal trays in a steam oven and subjected to steam at a temperature of approximately 225 F. for one hour. If the potatoes were to be mashed, this was done immediately by whipping in an electric mixer with fat, salt, pepper and milk. The mashing process took about five minutes. During the interval between the completion of the cooking and the serving, the potatoes, either whole or mashed, were placed in trays in a steam warming oven at a temperature of 157 F. The time of holding ranged from fifty to one hundred and twenty minutes. The loss in thiamine incurred at each step has been computed on a dry weight basis. Small losses resulted from soaking the potato prior to cooking and from holding the potato in a steam oven for a period as long as one and a half hours. The greatest loss, 14.1 per cent of the original value for thiamine, occurred during the steam cooking process. The mashing of the potato did not appear to be destructive of the thiamine. The overall loss in thiamine exclusive of that during soaking approximated 20 per cent.

Effects of Variations in Dietary Protein on Men Doing Manual Work.—Darling and his associates made studies on 22 volunteers from a civilian public service camp, who continued on the work regimen of the camp. At the start each subject was given a thorough physical examination, clinical laboratory examination of blood and urine and blood chemical estimation. Assessment of physical fitness each week was by means of the so-called pack test, in which the subject, wearing a rucksack weighted to approximately ⅓ his body weight, stepped up onto a 16 inch platform and back down onto the floor once each two seconds. The stepping exercise was terminated at five minutes; after stopping, the pulse was counted for three periods: one to one and one-half minutes, two to two and one-half minutes and four to four and one-half minutes of the recovery period. From these data a numerical score was calculated. The experiment was continued for eight weeks on the modified diet. Within two months no measurable influence either deleterious or beneficial could be observed on the physical vigor or efficiency of 8 healthy young men subsisting on a diet adequate in calories but restricted in protein. The daily protein intake averaged 50 to 55 Gm., little of which was of animal origin. Similarly no beneficial or harmful effect could be observed in two months on 8 men subsisting on a diet providing 160 Gm. or more of protein, mostly first class. These studies fail to confirm Chittenden's conclusions that a restricted protein diet improves physical well being. His conclusion that there is no impairment of health by such a diet is completely supported.

Medical Annals of District of Columbia, Washington

13:363-379 (Oct.) 1944

Study of 200 Cases of Infertility. H. Hertzberg.—p. 363.
Interpretation of Dreams: Science or Fiction? F. S. Caprio.—p. 367.
Encephalitic Form of Benign Lymphocytic Choriomeningitis: Report of Case. T. F. Keliher.—p. 373.
Congenital Hemiedema: Report of Case. W. M. Yater and S. W. Nealon Jr.—p. 377.

New York State Journal of Medicine, New York

44:2175-2286 (Oct. 15) 1944

Experiences with Use of Desiccated Thyroid: Methods of Detecting Self-Induced Hyperthyroidism, with Report of Case in Which Auricular Fibrillation Occurred. L. M. Hurxthal.—p. 2217.
Complications of Cataract Extraction. J. H. Dunnington.—p. 2224.
Calcific Deposits in Shoulder. H. L. McLaughlin.—p. 2231.
Bicipital Tenosynovitis. R. K. Lippmann.—p. 2235.
Treatment of Poliomyelitis. I. J. Sands.—p. 2242.
Problems in Postoperative Care of Cancer Patients. N. Treves.—p. 2248.
Role of Hydrotherapy in Rehabilitation. H. J. Behrend.—p. 2255.

44:2331-2361 (Nov. 1) 1944

Evaluation of Continuous Caudal Analgesia. C. B. Lull and R. A. Hingson.—p. 2331.
Diagnosis of Disorders of the Small and Large Intestine. E. D. Kiefer. —p. 2342.
Role of Hospital in Medical Care. M. F. Cahal.—p. 2350.
Platybasia and Occipital Vertebra Causing Foramen Magnum Encroachment and Resulting Neurologic Symptoms. L. A. Hadley.—p. 2355.
Epithelial Cysts. F. A. Dolce and R. L. Clark.—p. 2358.
Survey of 116 Cases of Pneumonia in Hospital Series and 22 Cases of Pneumonia in College Infirmary Series. C. O. Davison.—p. 2360.

Ohio State Medical Journal, Columbus

40:925-951 (Oct.) 1944

Functional and Organic Diseases of Gastrointestinal Tract: Physiologic and Medical Considerations. A. C. Ivy.—p. 925.
Tropical Diseases: Their Geography, Biology and Prevalence. W. M. German.—p. 930.
Progress in Neurosurgical Treatment of War Wounds. W. J. Gardner. —p. 936.
Diverticulitis of Distal Colon. H. G. Reineke.—p. 939.
Vertigo: Practical Considerations. P. M. Moore.—p. 942.
Surgical Approach to Labyrinth in Ménière's Disease. H. M. Goodyear. —p. 944.
Method of Preservation of Sterile Needle for Several Hours. J. D. Walters.—p. 945.
Primary Pneumococcic Peritonitis. H. W. Smith.—p. 946.
Spontaneous Rupture of Spleen in Chronic Myeloid Leukemia. M. M. Greenfield and H. Lund.—p. 950.
Treatment of Acute Conjunctivitis with Tyrothricin. C. J. Streicher. —p. 951.
Historical Notes on Northwestern Ohio Medical Association. J. Forman. —p. 952.

Psychosomatic Medicine, Baltimore

6:283-352 (Oct.) 1944

Criteria for Therapy in Psychosomatic Disorders. F. Dunbar and J. Arlow.—p. 283.
Some Psychologic Aspects of Sexual Promiscuity. E. D. Wittkower and J. Cowan.—p. 287.
Urinary Control and Enuresis. J. Louise Despert.—p. 294.
Genetic Factor in Autonomic Nervous System Function. H. Jost and L. W. Sontag.—p. 308.
Carbohydrate Tolerance of Mentally Disturbed Soldiers. H. Freeman, E. H. Rodnick, D. Shakow and Thelma Lebeaux.—p. 311.
Personality Organization and Anoxia Tolerance. M. Hertzman, J. Orlansky and C. P. Seitz.—p. 317.

Texas State Journal of Medicine, Fort Worth

40:269-312 (Sept.) 1944

Welding Fumes in Steel Fabrication. P. Drinker and K. W. Nelson. —p. 275.
Newer Knowledge of Rheumatic Fever. Gladys J. Fashena.—p. 278.
Medical Management of Common Esophageal Disorders. C. O. Patterson, M. O. Rouse and J. S. Bagwell.—p. 284.
Free Skin Graft: Special Technic. E. J. Poth.—p. 290.
Newer Method in Treatment of Fractures of Os Calcis. B. L. Schoolfield.—p. 294.
Acute Mastoiditis Following Sulfonamide Therapy. L. M. Sellers. —p. 297.

40:313-354 (Oct.) 1944

Continuous Caudal Anesthesia with Improved Gravity Drip Method. J. M. Siever.—p. 316.
Congenital Bladder Neck Obstruction. J. M. Pace.—p. 322.
*Plateau Test in Breast Carcinoma. D. Jackson and A. O. Severance. —p. 328.
Artificial Fever Therapy. E. P. Cayo.—p. 330.
Vaginal Thrush. H. L. Gardner.—p. 333.
University of Texas Child Health Program: Its Basic Principles and Objectives. A. E. Hansen.—p. 338.

Plateau Test in Breast Carcinoma.—Jackson and Severance describe a "plateau" test, which is produced by the following manipulation: The flat of a hand is placed on each side of the tumor. Gently the hands are brought toward each other with sufficient pressure to produce a rounded surface between them and over the tumor. This surface is likened to the top of a hill. In a normal breast, or in the presence of a benign tumor, there remains a perfectly rounded top. In the presence of an early malignant growth there is a flattening of this top—a flattening containing fine irregularities; hence the name plateau. After working with this test for several years the authors have found that the zone just above the nipple does not lend itself to an accurate interpretation, and consequently they no longer use the test in this area. Chronic cystic mastitis contributed the greatest error in false positives, since this lesion gives a smooth flat plateau at times, whereas in cancer the plateau is irregular and often has fine lines and indentations on its surface.

Virginia Medical Monthly, Richmond

71:497-552 (Oct.) 1944

Tumors of Bladder. W. M. Coppridge.—p. 500.
Asthmatic Atelectasis Simulating Pneumonia. D. B. Cole, W. L. Nalls and L. J. Buis.—p. 505.
Diagnostic Value and Technic of Aspiration Biopsy of Sternal Marrow. M. L. Dreyfuss.—p. 508.
Menstrual Irregularity. W. Bickers.—p. 513.
Nausea and Vomiting of Pregnancy Treated with L-Histidine Monohydrochloride: Preliminary Report. A. J. Russo.—p. 522.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

6:115-166 (July) 1944

Myocardial Infarction. T. E. Lowe and W. B. Wartman.—p. 115.
Acute Left Auricular Failure. C. Bramwell and A. M. Jones.—p. 129.
Cardiac Involvement in Spirochetal Jaundice. W. E. Hume and P. Szekely.—p. 135.
Incomplete Bundle Branch Block. C. W. Curtis Bain.—p. 139.
Place of Foliandrin Within Group of Cardiac Glucosides. L. E. Schindel and K. Braun.—p. 149.
Temporal Arteritis. J. W. Brown and F. Hampson.—p. 154.
*Nicotinic Acid in Treatment of Angina Pectoris. W. Stokes.—p. 157.
Pulmonary Embolism: Clinical and Cardiographic Progress of Case. D. Lewes.—p. 161.

Nicotinic Acid in Treatment of Angina Pectoris.—Stokes studied the effect of nicotinic acid, nicotinamide, ascorbic acid, a gentian mixture and glyceryl trinitrate on 10 patients with effort angina. Eight of the 10 patients had had cardiac infarction at some previous date, but sufficient time had elapsed for maximum myocardial recovery to occur; 1 of the remaining 2 had hypertension, and the other with classic anginal attacks had a normal cardiogram. All were studied as ambulant outpatients. Clinical examination included cardioscopy and cardiography. Each test period lasted at least one week, and this was often repeated. There was no particular sequence, and a placebo in the form of ascorbic acid or a gentian mixture was interspersed at intervals. Nicotinic acid was employed in doses of 50 to 100 mg. prophylactically and for the direct relief of the painful attack in some of the cases. In all cases during further trial periods it was given in regular doses of 25 or 50 mg. up to 200 mg. daily. Similarly nicotinamide was given in amounts up to 400 mg. in a day. No greater benefit resulted from nicotinic acid or from nicotinamide than from a placebo. Changes in the electrocardiogram of cardiac ischemia in man following the administration of nicotinic acid suggest that the drug can improve coronary blood flow; but this results only from a dosage large enough to produce peripheral flushing, which in itself is an uncertain and unpleasant effect. Once again glyceryl trinitrate has shown that it has no equal in the treatment of angina pectoris, and nicotinic acid has no claim to routine use in this complaint.

Revista Médica Brasileira, Rio de Janeiro

17:35-113 (July) 1944. **Partial Index**

*Tuberculous Bronchopathies. R. A. Piaggio Blanco and J. C. Dighiero. —p. 35.
Causal Factors of Curves of Tuberculinization. P. Purriel.—p. 45.

The Tuberculous Bronchopathies.—Piaggio Blanco and Dighiero classify tracheobronchial tuberculosis as the primary forms and those complicated by lymph node or pulmonary tuberculosis. The signs of primary tracheobronchial tuberculosis are those produced by local irritation followed by chronic fibrosis and chronic bronchial obstruction. The asthmatic and chronic bronchitic forms are most frequent. Tracheobronchial tuberculosis is frequent in primary pulmonary tuberculosis of children and adolescents and in secondary and tertiary pulmonary tuberculosis in adults. The diagnosis is established by bronchoscopy. The bronchoscopic aspects vary with the seat of the lesion and the evolutional stage of the latter. The bronchial mucosa is frequently the seat of both tuberculous and nontuberculous lesions. The bronchi are either compressed by the enlarged lymph nodes or retracted by sclerosis of the pulmonary lesions. The evolution of tuberculous bronchial lesions runs parallel with the evolution of the tuberculous process in the involved lobe. Acute exudative bronchial tuberculosis appears in some cases two to six years after the regression of the pulmonary tuberculosis and its calcification. Bronchoscopy is the procedure of choice in the diagnosis of the lesion. It is harmless if contraindications are respected. The contraindications are laryngeal ulcers, spitting of blood and acute bilateral tuberculosis. The author performed 1,200 bronchoscopies without serious reactions. Biopsy of the bronchial mucosa is not to be performed.

Book Notices

The Diseases of the Endocrine Glands. By Hermann Zondek, M.D., Director of the Medical Division, Bikur Cholim Hospital, Jerusalem. Translated by Carl Prausnitz Giles, M.D., M.R.C.S., L.R.C.P. Fourth (Second English) edition. Cloth. Price, $11. Pp. 496, with 180 illustrations. Baltimore: William Wood & Company, 1944.

This edition of the widely known textbook on endocrinology has been brought down to date by inclusion of recent investigative material. Approximately the first quarter of the book is devoted to a general discussion of endocrinology in which the author attempts to correlate as much as possible of what has been published in the field of experimental and clinical endocrinology and of much that is known about relationships of this field with nutrition, neurology and certain other parts of physiology and pathology. The larger section of the volume is devoted to a series of chapters on a conventional clinical grouping of endocrine disorders, frequently illustrated with specific cases. The author introduces some chapters about less conventional topics, such as diencephalic disease, hyperostosis frontalis, the Schueller-Hand-Christian syndrome, osteomalacia, which is now being considered a nutritional disorder, and the status thymicolymphaticus. It is curious that there is no section on diabetes mellitus except a very short chapter on diabetes of a pituitary type. Nevertheless more space is given to a chapter on hyperinsulinism.

One of the characteristics of this author's work is his continuing tendency to rationalize all possible situations as he describes them. This is most frequently done by invoking the relationships between hormones and the nervous system or by comments on differences in the results of hormone stimulation depending on the nature of the end organ and its condition at the time.

The bibliography is arranged by chapters and by the names of the authors and occupies forty-six pages. This suggests that the volume affords an extensive guide to the now large literature of experimental and clinical endocrinology. It is perhaps not surprising in view of the author's chief experience in Germany that a large proportion of the bibliography is devoted to the German journal literature and that the references to work in the last decade in North America are relatively fewer than is the case in most American publications in this field. The book is very readable and will be welcomed by those who want an extensive presentation of the point of view of one of Europe's older clinical endocrinologists.

Textbook of Histology for Medical Students. By Evelyn E. Hewer, D.Sc. Third edition. Cloth. Price, 17s. 6d. Pp. 364, with 344 illustrations. London: William Heinemann, Ltd.; St. Louis: C. V. Mosby Company, 1944.

This textbook of histology is announced as being prepared especially for medical students. In this it does not differ from most of the other textbooks on the subject. As stated in the preface, the author has tried to emphasize this purpose by omission of "detail that is of academic interest rather than of practical importance." Apart from the question of whether the teaching of medical students on such a basis is desirable, there remains the problem of determining just what is "detail of academic interest" and what is of "practical importance." There is no evidence in the text that the author has been able to make a sharp distinction between these. The abbreviation of the text is mainly due to omission of discussion and description such as the reviewer feels is necessary to give the student a clear insight into our present knowledge and lack of knowledge of the structure and function of the various cells, tissues and organs. The author states in the preface that references are given for further information. However, the references are few and do not concern original papers or reviews that might stimulate the student but general textbooks.

The text contains a few confusing statements. On page 11 the cells of transitional epithelium are described as "protoplasmic and soft." On page 88 it is said that a nerve cell has "no true cell wall (!) but merely a covering membrane," while in the same chapter on page 92 we find "a nerve cell has no true cell membrane, the external surface being naked."

The illustrations consist of photomicrographs and diagrammatic drawings. The first are good but inadequately labeled; the majority of the latter are unacceptable. The book contains a series of photographs of brain stem sections. For a description of them the student is referred to textbooks of anatomy or neurology.

An interesting feature of this book is that each chapter is followed by a description of the reaction of tissues to various physiologic and pathologic conditions. However, the possible goal of this, to aid the student in the transition to pathology, is not reached because of the epigrammatic character of the descriptions.

Latrodectus mactans y latrodectismo: Estudio experimental y clínico. Por Rafael R. L. Sampayo. Tesis de doctorado en medicina, Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Instituto de fisiología. Paper. Pp. 227, with 48 illustrations. Buenos Aires, 1942.

In all probability this is the most comprehensive monograph ever published on spiders of the black widow group. The study was suggested to the author by Dr. B. A. Houssay, in whose laboratory most of its experimental part was carried out. The study is systematic. It starts with the history of latrodectism, zoologic place of Latrodectus and its biology (ecologic data, longevity, habitat, reproduction and so on), which is followed by a chapter by Dr. J. Porto on the structure of the poisonous glands of the insects. Then there is an analysis of what is known on the chemical components of the venom, effects on other animals and pharmacology of the active principles. From the experiments of the author, sometimes duplicating results already known, it results that the poison exerts its effects on the central nervous system with subsequent rise of the blood pressure and changes in the T wave of the electrocardiogram and respiratory disturbances. The effects on the blood, bronchi, intestine and uterus are also carefully studied. Some of these effects are neutralized by specific antiserums. Other chapters deal with the treatment of intoxication in human beings, manufacturing and purification of specific antiserums, clinical study of latrodectism and social importance of the condition. The references given are 923, among which there is an imposing amount of those from Latin American workers. The illustrations are excellent.

Diseases of the Digestive System. Edited by Sidney A. Portis, B.S., M.D., F.A.C.P., Associate Professor of Medicine, University of Illinois Medical School, Chicago. Second edition. Cloth. Price, $11. Pp. 932, with 182 illustrations. Philadelphia: Lea & Febiger, 1944.

This newly revised and rearranged compendium is written by forty-eight different authors in the field of digestive diseases. The entire gastrointestinal tract, the liver, the gallbladder and the pancreas are discussed. There are separate chapters by recognized authors on the anatomy and physiology of the major organs. Chapters are devoted to gastrointestinal manifestations of cardiovascular, renal, urologic, neurogenic, psychosomatic, endocrinologic and allergic diseases. Excellent chapters on intestinal protozoal and metazoal infestations are included. In this new edition the psychosomatic aspects of digestive disease have been especially stressed. The writing of each chapter has been left to its particular author. This gives variety and freshness of approach but leads also to inequalities of treatment, varying from the extraordinarily concise chapter on linitis plastica, by Aaron, to the more diffuse chapter, by Gaither, on gallbladder disease. The majority of chapters are quite complete but concise. The result is a small book, easily carried, printed in large type on good paper and well illustrated. It can be recommended to students and practitioners alike as a practical book of easy reference, well up to date in regard to new discoveries, diagnosis and treatment.

Special Delivery: The Expectant Mother's Handbook. By B. D. Rosenberg, M.D. Cloth. Price, $2. Pp. 96, with 43 illustrations by Gladys McHugh. Chicago & New York: Ziff-Davis Publishing Company, 1944.

Under the catchy title this small book is an attempt on the part of a physician to present the story of childbirth to a lay audience in such a way as to remove the fears and fancies surrounding this physiologic function. He accomplishes his purpose by means of numerous beautifully executed illustrations by a well known medical artist and descriptive material to elucidate the pictures. Although the book may hold some interest for potential mothers, it doesn't replace the antepartum information provided by many well known textbooks.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MUSCULAR CRAMPS IN NORMAL PERSONS

To the Editor:—**Please tell me the cause of muscle cramps in athletes aside from so-called heat cramps. Does the calcium balance have any part in this condition? Is there any preventive?** **M.D., Illinois.**

ANSWER.—There is surprisingly little known about the cramps which develop in normal persons during exercise, at night when turning or stretching, after yawning or when some unusual position is held excessively long. In these circumstances an intense involuntary contraction is superimposed on the voluntary activity in much the same manner as occurs in the pathologic state described as myokymia. Apparently the contraction is accompanied by spike action potentials and therefore is more closely related to normal voluntary contractions than to the so-called contractures in which spike potentials are not seen. The cause of the cramp lies in an abnormal sensitivity of the muscle fiber at or near the motor end-plate which permits the appearance of series of autogenic discharges which force the muscle into an intense tetanic contraction. This process is evidently intensified by fatigue, insufficient blood supply, mild myositis or neuritis, vitamin B deficiency, alkalosis, low serum calcium and a variety of congenital diseases of the muscles, and the cramps seen in these conditions have clear affinities with those observed in normal persons. Collip and Backus have suggested that cramps in swimmers and runners might be due to tissue alkalosis due to hyperventilation and loss of carbon dioxide in excess of production. If this should be the case, calcium administration might on theoretical grounds be useful, although the difficulty of maintaining an increased serum calcium in such circumstances would be great. In addition Denny-Brown and Pennypacker have reported that calcium was ineffective in controlling cramps occurring in patients with myokymia.

The observation that drugs, such as neostigmine, which potentiate acetylcholine activity increase the incidence of myogenic muscle contractions related to cramps induced Moss and Herrmann to employ quinine, which has a curare-like action, antagonistic to acetylcholine, to prevent night cramps, and they report a number of cases successfully treated in this manner. This drug might therefore prove useful in reducing the incidence of cramps in athletes, without harm to voluntary muscular performance.

References:

Collip, J. B., and Backus, P. L.: The Effect of Prolonged Hyperpnea on the Carbon Dioxide Combining Power of the Plasma, the Carbon Dioxide Tension of Alveolar Air and the Excretion of Acid and Basic Phosphate and Ammonia by the Kidney, *Am. J. Physiol.* **51:** 568 (April) 1920.

Denny-Brown, D. E., and Pennypacker, J. B.: Fibrillation and Fasciculation in Voluntary Muscle, *Brain* **61:** 311 (Sept.) 1938.

Moss, H. K., and Herrmann, L. G.: The Use of Quinine for Relief of "Night Cramps" in the Extremities, THE JOURNAL, Oct. 19, 1940, p. 1358.

Wilder, J.: Crampus Disease and Localized Muscular Cramps, *M. Rec.* **152:** 442 (Dec. 18) 1940.

NASAL SIPHONS

To the Editor:—**I would appreciate information concerning the Nichols nasal siphon. Is this an acceptable apparatus for cleansing and irrigating sinuses? Will it evacuate the sinuses of pus and thick discharges? Is it sound practice to use it for acute and chronic sinusitis?**

A. L. Henrichsen, M.D., Van Nuys, Calif.

ANSWER.—Siphons of this type are in use and are prescribed by physicians under proper precautions. They are suitable for selected conditions and patients. The siphon will certainly cleanse the nasal passages, and the one mentioned, because of its suction aspects, may conceivably remove secretion from the sinuses.

There is a risk, however, in the use of any siphon: if the procedure is improperly carried out, infected nasal secretions and irrigating fluid may be forced up into the eustachian tubes with a resultant acute otitis media.

Patients using nasal irrigations must be warned of its dangers and instructed as to its proper use. They should be of an age and intelligence sufficient to assure their following instructions carefully.

It might be best to reserve the use of siphonage for chronic and subacute instances of sinusitis and avoid its use in the more acute types.

EXPOSURE OF MAPHARSEN SOLUTIONS TO AIR

To the Editor:—**In some clinics for the treatment of syphilis the method of preparing the mapharsen is as follows: An ampule of 0.40 Gm. or 0.60 Gm. (ten dose) size of mapharsen is dissolved in 100 cc. of distilled water with careful sterile technic. The solution, with dissolved mapharsen, remains in the rubber stoppered bottle. The dose required for each patient is removed from the bottle as needed. This subject is of clinical importance, and in clinics with a large case load it is time saving to prepare the mapharsen solution before the clinic begins, if the efficiency of the treatment is not reduced by such a method. Has any clinical or experimental information been collected to determine that the therapeutic efficiency of mapharsen solution is lessened when prepared two to four hours previously? The statement appears in Moore's Modern Treatment of Syphilis (ed. 2, Springfield, Ill., Charles C Thomas, 1943, p. 68) that mapharsen "oxidizes slowly and upon oxidation becomes less toxic as well as less efficent therapeutically." However, in the Parke-Davis instruction folder the statement appears "Mapharsen solution may be allowed to stand for several hours exposed to air with no increase in toxicity or loss in efficacy." References to the literature and any other information on this subject will be appreciated.**

Laurence J. Underwood, M.D., Huntington Park, Calif.

ANSWER.—The only reference in the literature on the point raised by the enquirer is in the article by Tatum and Cooper "Experimental Study of Mapharsen as an Antisyphilitic Agent (*J. Pharmacol. & Exper. Therap.* **50:**198 [Feb.] 1934). Here it is clearly stated that when mapharsen solution is allowed to stand exposed to the air for several days both toxicity and therapeutic efficiency are somewhat decreased. There is no information that there is a significant decrease in therapeutic efficiency when such a solution is allowed to stand for only a few hours. The clinic procedure referred to in the query is customary in many clinics for the treatment of syphilis.

It is understood that Dr. A. L. Tatum of the University of Wisconsin has done further experimental work on the subject and has accumulated a good deal of unpublished evidence on the effect of aeration on mapharsen solutions.

OSTEOPATHIC REPORT

To the Editor:—**Recently a patient presented me with a report which he had received from an osteopathic hospital. The report read as follows: "In the standing position, the articular surface of the left femur, the left iliac crest and the contact of the perpendicular to the long axis of the sacrum with the left femoral plane were respectively 0.6, 0.7 and 1.8 cm. nearer the floor than the corresponding points on the right. The midpoint of the 1st sacral segment and the symphysis were respectively 0.4 and 0.6 cm. to the right of the midheel line. Lateroflexion change to the left of the 4th and 5th lumbar segments was observed with compensatory lateroflexion change to the right of the upper lumbar segments." The patient wanted to know what was wrong. Can you give me help in making a diagnosis from this report?**

Albert Tormey, M.D., Madison, Wis.

ANSWER.—This report from an osteopathic hospital is quite meaningless to an orthopedist. It is utterly impossible to base an opinion on any recognizable diagnosis on this report.

IRRITATION OF EYES FROM PENTACHLOROPHENOL

To the Editor:—**I have been asked by one of the local industries whether nitrocellulose and pentachlorophenol are injurious to the eyes, or the thinner also used: ethyl acetate and butyl alcohol. Would the fumes of these be irritating?** **W. Edward McGarvey, M.D., Jackson, Mich.**

ANSWER.—With the exception of nitrocellulose, all of the substances mentioned may be irritating to the eyes if applied directly. Nitrocellulose is a solid, probably has no melting point and does not give off vapors. If ignited, nitrocellulose decomposes with the formation of the dangerous oxides of nitrogen, fully capable of eye injury but more likely to involve the respiratory tract. Pentachlorophenol is a dangerous chemical, but because of its high boiling point (310 C.) it is little likely to emit harmful vapors when cold. When heated, this substance gives rise to highly pungent odors and irritation. Likewise its dust is irritating. Ethyl acetate and butyl alcohol fall into less harmful categories. At about the level of 150 parts per million of air, ethyl acetate may bring about ocular inflammation, although only a slightly lower level is regarded as safe for extended exposures. Butyl alcohol usually is rated as being about three times as toxic as ethyl alcohol, but it is recognized that minor eye irritation from its vapors exceeds this proportion. Pentachlorophenol is the substance in this group most likely to cause irritation of the eyes.

PREGNANCY IN RAYNAUD'S DISEASE

To the Editor:—**A patient who has Raynaud's disease is contemplating pregnancy. Is pregnancy advisable under such circumstances?**

Ben N. Miller, M.D., Columbia, S. C.

ANSWER.—Pregnancy does not have an adverse effect on Raynaud's disease.